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THE NEEDS AND DUTIES OF DERMATOLOGY *

ERNEST DWIGHT CHIPMAN, M.D.
SAN FRANCISCO

As prelude to a strictly scientific program, it seems fitting that the chairman's address should deal with some of the more general considerations which concern dermatology as a specialty. There are many topics deserving of careful thought, but nothing is more timely, perhaps, than a résumé of our needs and duties.

In a general sense, our greatest need is efficiency, and our paramount duty is service. Efficiency and service are closely related, because the greater our efficiency, the greater our capacity for service.

The question of efficiency should interest us with respect to both immediate and future requirements. It were well that we plan somewhat for the dermatology of tomorrow, even while seeking to better that of today.

We must all be aware of the growing sentiment toward standardization in the specialties. We have been, and we are now, living in an age of self-styled specialists. The specialist is as easily made as home-brew and is of equally harmful potential. The only criterion of proficiency is recognition by fellow practitioners of one's own branch. Such recognition may take the form of election to a national society. This is not necessarily conclusive, for good men are sometimes passed by and indifferent ones chosen. Under present conditions, the national societies have an opportunity of rendering infinitely useful service. This, I believe, they are for the most part doing; but it is self-evident that, properly to function in this respect, they must resolutely avoid anything which savors of personal animosity, racial antipathy, nepotism or friendly predilection.

The fact that specialism is entered so easily and through so many channels does not make for uniformity of standards. Whatever may be said against a wider application of the elective system for the undergraduate medical students, it seems obvious that those who intend to specialize should be given the greatest latitude in their intern year.

If the well-educated man is one who knows everything about something and something about everything, the well-trained specialist is one who knows everything about his own department and something about all the others. So that, however zealously we may strive for perfection in one line, it must not be at the expense of broad general training. Specialism of today is justly criticized on the ground of a tendency toward narrowness. The reason for this criticism should be absolutely removed.

Postgraduate colleges as conducted today undoubtedly perform valuable service. The casual course of six weeks does not, however, equip one for a specialty. What seems an urgent need is the designation by unquestioned institutions which will give the same standing to the specialist that the M.D. degree gives the general practitioner.

What about our own case? Of course we need more efficiency. We are quite conscious of our shortcomings. And obviously, by the development of personal attributes, we may work to a higher plane of excellence. But if dermatology as a specialty needs more efficiency, it needs also the means whereby it is to be attained. We shall find those means when we find truth. If we would be really effective, we must find the truth that so often is hidden from us.

What is the truth about dermatitis herpetiformis, or psoriasis, or lupus erythematosus or vitiligo? What is the truth about many of the dermatoses which we bedeck with names that suggest so much wisdom and conceal such appalling ignorance? Our real, our urgent, our vital need is truth; to know what causes all these diseases with the long names.

Our duty in the premises is apparent enough. Both as individuals and as a section, we should do our utmost toward the solution of the problems of etiology, which constitute, today, our most serious handicap.

There are many promising fields for research. Among the external agencies, the part played by fungi has probably by no means been realized. Concerning possible internal causes, we have gone through so many disappointing experiences with various hypotheses that the mildest suggestion of novelty in etiology at once provokes violent reaction.

However much may be said in favor of a certain degree of enlightened skepticism, we must not, through fear of an overswung pendulum, allow the clock to run down. We have need of open minds. The truth that we are seeking will not be found in the reactionary spirit which mistakes enthusiasm for fanaticism, nor will it be found in the exuberant spirit of faddism. Probably it will be found somewhere between the two.

In our search for etiologic factors, we now have a list of possibilities, most of which belong exclusively to the present generation. It is our duty to exploit them without preconceptions as to their validity. I believe that it is fair to propound the following as worthy of complete investigation in every dermatosis of unknown origin: focal infection, the sympathetic nervous system, the endocrine glands, protein sensitization and disturbed metabolism. It seems not

* Chairman's address, read before the Section on Dermatology and Syphilology at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

unreasonable to suppose that such investigation will add materially to our store of etiologic knowledge.

Now, as to our duties. Granting that our chief duty is service, we may consider it under three heads: (1) service to individual patients; (2) service to society in general, and (3) service to the medical profession.

The most valuable service which the dermatologist can perform for the individual is the interpretation of the cutaneous lesion. Too often the careless view is held that the skin specialist is solely concerned with superficial lesions of cosmetic importance only. It is true of course that many consultations are for the relief of relatively innocuous disorders; but it is equally true that many of the lesions for which relief is sought, in the belief that they are trivial, represent boundary posts on the frontier of serious disease.

The interpretation of a given lesion may mean the simple diagnosis of some definite disease, or the recognition of some constitutional condition which, for the moment, is giving rise to no signs or symptoms elsewhere.

In such serious conditions as the acute exanthems, precancerous or frankly malignant lesions, and the various forms of tuberculosis, leprosy or syphilis, the diagnosis practically carries its own interpretation. There is a large group, however, in which slight cutaneous lesions may signify some grave constitutional condition. It is here that we may perform service of utmost value to the individual, if we are complete and accurate in our interpretations.

Some lesions point to diabetes, some to cardiac disturbances, some to pelvic disorder, some to the endocrines, and some suggest toxemia, the search for which leads to focal infection.

The point cannot be made clearer, perhaps, than by taking, as an example, a case of lupus erythematosus. I do not believe that we are doing our full duty in any case of lupus erythematosus in which we are content with a diagnosis plus even successful local treatment. Lupus erythematosus is so definitely suggestive of toxemia that, whether it be from a tuberculous lesion or an infection in the antrum, we have not satisfied the moral obligation which we assume in taking the case, unless, in addition to the treatment, we take on the burden of interpreting the lesions in the most complete sense that available evidence allows. If we find, for example, an infection of the antrum, we must assume that, whether or not it be in etiologic relation with the cutaneous lesions, it is a potential source of danger, about which it is our duty to advise. It is only through the adoption of such an attitude that we can hope to give the same service that we would wish to receive were we in the place of the patient. This, after all, would seem to be a fair criterion of service.

The medical profession has definite duties to society, in which all the specialties must participate according to their respective abilities. No obligation is more important than the conservation of public health. Aside from work along broad lines of general preventive medicine, in various aspects of which dermatology is vitally interested, we can serve humanity to no better purpose than in the exposure of quackery.

Quackery flourishes on nothing so much as on ignorance. The fallacies of former generations concerning the nature of skin diseases still linger in the popular mind, which even today is prone to regard any eruption as evidence of impurity of blood or the stigma of personal or ancestral vice.

These misconceptions make a particularly favorable soil for the development of quackery. The desire for beauty is also a human weakness which is bounteously catered to in the exploitation of innumerable alleged aids to cosmetic perfection. No one knows better than the dermatologist the heavy toll paid by the sufferers from paraffin oil injections; no one knows better the needless unhappiness from experiences with noxious hair dyes, hair removers and even hair growers.

To us, the duty is clear. It is simply the diffusion of truth. In California, a good start has been made by a medical organization which is called the League for the Conservation of Public Health.

One of its activities along educational lines is in cooperation with two daily newspapers which devote certain space to medical information. Questions are referred through the league to the medical man who is deemed an authority in the subject involved. These newspapers are also furnished with various medical articles written by specialists. Both in Los Angeles and in San Francisco, it is now possible for the layman to obtain authoritative opinion or guidance concerning any medical problem. Thus, our profession is attempting, in some measure, to fulfil its obligation to the community, with respect both to preventive medicine and to quackery.

The duty of dermatology to the profession is cooperation. While this is necessarily a reciprocal relation, we shall do our part by attempting to keep in closer touch with medicine in general, as well as by correlating our findings with those of internists and of specialists in other lines. We owe it to the profession to make known in plain terms the significance of dermatologic lesions as we interpret them. We need to write for the man in general practice as well as for our confrères in dermatology.

We need to make of dermatology a clearing house for the subject of syphilis. While we recognize the interest of the internist and the specialist in other branches, we must insist that the teaching and treatment of this disease is today, as in former times, an integral part of dermatology. Before the development of the Wassermann test, there was never doubt as to the destination of a syphilitic patient. Because of the training of dermatologists in the recognition of the objective signs of the disease, the matter was by common consent left in their hands. Today, syphilis is diagnosed in the laboratory and is treated by any or by all. It is our duty to demonstrate such proficiency in respect to this disease that the profession at large will willingly regard it as belonging to dermatology.

There is little need for recapitulation. On the seal of Yale University is the inscription "Lux et Veritas." That phrase epitomizes, I believe, both our needs and our duties. And for dermatology, my prayer would be that of David: "O send out thy light and thy truth: let them lead me."

391 Sutter Street.

Hookworm Disease in Colombia.—According to a recent report by Dr. F. A. Miller, director of the antihookworm campaign, 53,390 persons were examined during the year 1921; 49,940 (92 per cent.) were infected. Treatment was given to 47,822, and 37,488 (78 per cent.) were cured. Up to May 31, 1921, all the expenses were paid by the National Health Board of the Rockefeller Foundation, but from June 1, 1921, the Colombian government will bear 20 per cent. of the expenses. The department of Boyacá and Santander del Norte have contributed $5,000 each to the expenses, and the department of Antioquia, $2,000.

THE LIMITATIONS OF INTRAVENOUS MEDICATION *

CARL VOEGTLIN, PH.D.
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WASHINGTON, D. C.

Therapy, as other branches of medicine, is subject to influences which, temporarily at least, tend to overemphasize the value of certain procedures. However, the gradual accumulation of new knowledge concerning the value of these procedures usually brings about a clearer recognition of their limitations. Of recent years, the practice of intravenous medication has come to the front to an ever-increasing extent; and, though by no means a new procedure, its application to the treatment of disease has assumed such proportions that it is both timely and important to consider for a moment the real merits and limitations of this form of therapy.

Of course, it is utterly impossible to cover this subject exhaustively in a brief article. All I can hope for is to point out some of the pharmacologic principles involved, illustrating them by a few examples, and to leave you in that healthful state of mind which demands proof in every instance before accepting claims in favor of intravenous medication. First of all, let us inquire into the reasons for this tremendous increase in the popularity of intravenous injections, for, as in other matters, I believe that the historical development of any procedure often throws light on the cause of its introduction and later practice.

HISTORY

Intravenous medication is not of modern origin; on the contrary, it antedates the discovery of the administration of remedies by subcutaneous injection. An English student of this subject [1] attributes the discovery of intravenous medication to Christopher Wren, a professor of astronomy at Oxford University, who, in 1656, made experiments on dogs, and showed that medicines could be introduced directly into the veins without disastrous effect. I believe that these experiments were the natural result of Harvey's discovery (1628) of the circulation of the blood, and they were probably devised to facilitate the rapid distribution of remedies in the body. A year later (1657), the first intravenous injection was made on man, and this was followed by numerous attempts to treat diseases by this method with a great variety of drugs. Crude empiricism characterized this period. All conceivable substances were injected, indiscriminately. A certain Dr. Hale of Boston had even the curiosity to inject into his own veins castor oil in order to test its purgative effect. Strange to say, he survived long enough to write down his experiences. We may look with ridicule on these early attempts; but I dare say that future generations may find amusement in some of our present-day experiments.

The modern application of intravenous medication began with Baccelli's [2] introduction of the intravenous injection of quinin for the treatment of malaria (1890). He advocated this method as a routine treatment, on the assumption that the drug is brought immediately into contact with the parasites, whereas, given by mouth, the time required by absorption would necessarily delay the action. This was soon followed by Credé's [3] treatment of septicemia by means of intravenous injection of colloidal metals. The reports of this period, as of the former, showed, however, that intravenous medication is not without danger, and consequently it did not come into vogue.

About twenty years later (1910), the discovery and use of arsphenamin in the treatment of syphilis revolutionized medical practice in this respect. Although this drug, given intramuscularly, produced a marvellous effect on the lesions, and caused the rapid disappearance of the parasites, it was soon realized that the local reactions at the site of injection were exceedingly objectionable, so, as a last resort, the intravenous route was chosen; and now, I dare say, millions of such intravenous injections have been given. Hence, the intravenous use of arsphenamin and its substitutes has done more than any other single factor to popularize intravenous treatment. Whereas, in former years, the average physician regarded an intravenous injection as a minor surgical operation requiring considerable practice and preparation, he now had to familiarize himself with this technic; and so it came about that intravenous injections were made on a fairly large scale by the practitioner. Most of the respect for the ever-existing possibility of dangerous reactions resulting from intravenous therapy then vanished, in spite of the fact that careful observers, from time to time, voiced a warning against the careless and indiscriminate use of arsenicals by this route. It is surprising, however, considering the enormous number of arsphenamin injections given, that the reports of untoward reactions have not been more numerous.

THERAPEUTIC EFFECT

This demonstration of the relative harmlessness of intravenous arsphenamin injections has prompted physicians to apply this method within recent years to other drugs and to other diseases, principally on the assumption that intravenous injection is of necessity followed by a more powerful therapeutic effect than is administration of the drug through other channels. The fact was forgotten that the intravenous administration of arsphenamin was simply an attempt to avoid pain and local reaction, and that it was not introduced in order to increase the therapeutic effect. I want to lay particular stress on this point, as this misconception seems to be quite prevalent among physicians and pharmacologists, and it is largely responsible for the present popularity of intravenous medication. I particularly call your attention to the data furnished by Fordyce, Craig, Harrison, Wechselmann and others which add assurance of the therapeutic efficiency of intramuscular and subcutaneous injection; and, during the last three years, we have been able to establish this fact by well-controlled experiments on animals, using a quantitative method. Thus, we showed [4] that the parasiticidal effect of injections of arsphenamin and neo-arsphenamin given intramuscularly is as good as that of the same dosage given intravenously.

That this should be so is not at all surprising in the light of some recent work of ours [5] on the mode of action of these arsenicals. Arsphenamin of good qual-

* Chairman's address, read before the Section on Pharmacology and Therapeutics at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

1. Fortescue-Brickdale, J. M.: Guy's Hosp. Rep. **58**: 15, 1904. Eggleston, Cary: Internat. Clin. **2**: 130, 1917.
2. Baccelli, G.: Tr. Tenth Internat. Med. Cong. **2**: 138, Part 5, 1890.
3. Credé: Berl. klin. Wchnschr. **38**: 941, 1901.
4. Voegtlin, Carl, and Smith, H. W.: J. Pharmacol. & Exper. Therap. **17**: 357 (June) 1921.
5. Voegtlin, Carl, and Smith, H. W.: J. Pharmacol. & Exper. Therap. **15**: 475 (July) 1920.

ity we believe to be practically nontoxic per se; but, after its introduction into the animal body, there is gradually formed from it, by partial oxidation, an extremely toxic modification (arsenoxid), which exerts its destructive action on the parasites and, to a lesser extent, on the tissues of the host. Therefore, we must regard arsphenamin as a drug which, after its introduction into the body, forms a depot of a potential drug. When arsphenamin is given intravenously, the depot is more widely spread over the body than when the drug is given intramuscularly, where it remains localized for at least a short time. Nevertheless, in principle, the intravenous injection establishes a depot just as does the intramuscular, and the foregoing experiments clearly prove that it matters little, so far as the therapeutic effect is concerned, whether this depot of arsphenamin is scattered all over the body or is confined to one muscle. The active modification of the drug "arsenoxid" is formed in both cases, and it reaches the parasites continuously by way of the circulation. It is this continuous stream of the active modification, to which the parasites are exposed over many hours, which causes their death.

It having thus been shown that arsphenamin when given intravenously exerts no more powerful parasiticidal effect than when injected intramuscularly, and that the intravenous method was chosen in order to avoid local reactions, the question arises: Are there any drugs which, under certain conditions, give better therapeutic results when injected intravenously? I believe that we must answer this question in the affirmative, as, for instance, when time is an important element in the treatment or when the drug is not sufficiently absorbed by other channels. The intravenous injection of quinin in malignant malaria, of strophanthin in certain cardiac cases, of diphtheria antitoxin in severe diphtheria, is not merely advisable but is absolutely indicated as an emergency measure. Under such conditions, the physician cannot afford the delay incident to the administration of these remedies through other channels.

With regard to the efficacy of intravenous quinin injections, clinical observers agree that the action in extreme cases is more prompt than when the drug is given by mouth, and the patient's life may thus be saved. However, as soon as the critical condition has passed, quinin should be given by mouth for the reason that the available evidence shows that malaria is not more readily cured by intravenous medication;[6] and this is supported by some recent findings[7] which indicate that about 90 per cent. of the quinin injected intravenously in man disappears from the blood within one minute, and is stored in the tissues.

Another example of the superior therapeutic effect of intravenous medication is the administration of salt solutions in severe hemorrhage.

With intravenous medication, the dosage required to cause a certain therapeutic effect is, with several drugs, considerably smaller than if treatment is given by other channels. Epinephrin, for instance, produces a much greater rise in blood pressure when injected into a vein than when given intramuscularly. On the other hand, the pressor effect is much more prolonged in the latter case, on account of the more gradual destruction of the drug by oxidation. If, therefore, we wish to counteract the depressing effect of certain drugs on the blood pressure, such, for instance, as arsphenamin, we choose the intramuscular injection of epinephrin in preference to the intravenous; and this principle holds for certain other drugs with symptomatic or etiotropic action. In other words, gradual absorption counteracts rapid destruction and elimination of the drug, and hence insures prolonged pharmacologic action, which often is a therapeutic desideratum.

6. Lane, Clayton: Malaria: A Critical Review, Trop. Dis. Bull. **19**: 93, 1922.

7. Ramsden, W.; Lipkin, I. J., and Whitley, E.: Ann. Trop. M. & Parasitol. **12**: 223 (Oct.) 1918.

COMMERCIALIZATION

What has been said concerning the superior value of intravenous medication with regard to the therapeutic effect is sufficient to raise a question as to the unscientific claims made by certain commercial interests who advertise a great variety of drugs put up in solution for intravenous use. Most of these products have not been included in New and Nonofficial Remedies by the Council on Pharmacy and Chemistry, because they are sold under misleading claims regarding their alleged safety and efficiency.[8]

SAFETY

We have so far considered principally the merits of the curative value of intravenous medication; but it is equally if not more important to inquire into the safety of this method of therapy.

It is perhaps unnecessary to call attention to the various possibilities of injury to the patient which may follow the use of a faulty technic. Asepsis is an essential requirement. It is also perfectly obvious that care should be exercised not to inject any air, solid particles or oil droplets, on account of the danger of embolism. However, this can be avoided by proper technic and, if necessary, filtration of the solution before injection. Furthermore, it is clearly evident that care should be exercised not to allow any of the drug to escape into the perivascular tissues in case such solutions cause local irritation. These untoward reactions are under the complete control of the physician. It sometimes happens that thrombosis occurs in the vein, which usually makes it impossible to use this vein for future injections.

It is, furthermore, of the utmost importance to realize that intravenous medication brings the drug into immediate contact with some vital organs, such as the heart and the central nervous system, and the drug concentration to which these organs are exposed is much greater, at least temporarily, than if the same dose had been given by the usual channels. Now, concentration is an all-important factor in drug action. All drugs, even the purest distilled water, are poisonous in higher concentration, and their beneficial effect is usually restricted to a range far below the toxic dose. Several hundred milligrams of caffein can be given to dogs with impunity by hypodermic injection; whereas 5 milligrams per kilogram of body weight rapidly injected into a vein will cause death by cardiac failure It appears to me not at all surprising, therefore, that serious reactions and even deaths sometimes occur from the rapid intravenous injection of such drugs as quinin, arsphenamin and its substitutes and strophanthin.

To be sure, the chances for the occurrence of such deplorable results can be reduced, if not completely avoided, by a full realization of the principles involved, followed by logical procedure. It should always be borne in mind that the rate of injection of any drug must be slow enough to give the blood a chance to dis-

8. Some of Loeser's Intravenous Solutions, J. A. M. A. **76**: 1120 (April 16) 1921.

tribute it as effectively as possible. Theoretically, this can be accomplished by giving a relatively concentrated solution very slowly, or by using a very dilute solution. No general rules may be laid down to fit every case; suffice it to say that the number of untoward reactions to arsphenamin have been very materially reduced by the now prevalent use of dilute solutions, given slowly by means of the gravity method. Clinical experience in this matter has fully corroborated previous experiments made by Jackson and Smith [9] of the Hygienic Laboratory. In these experiments, it was shown that the circulatory phenomena which ensue when an arsphenamin solution is rapidly injected into dogs can be avoided if the solution is given very slowly. That this should be so is not astonishing, if it is remembered that the proper functioning of the animal body depends on a nicely adjusted equilibrium of the body fluids and also of the tissues.

The application of chemistry and physics to the study of these equilibriums has taught us much in recent years. We now know that the chemical composition of the blood and its physical chemical properties, such as osmotic pressure, hydrogen-ion concentration and colloidal state, are maintained with remarkable constancy and appear to be essential for physiologic wellbeing. Some of the factors of safety which operate in the maintenance of normal conditions have been recognized. The hydrogen-ion concentration, for instance, is kept at a certain level by means of the so-called buffer value of certain blood constituents, which neutralize any excess of hydrogen or hydroxyl ions introduced into the body. It is this mechanism which protects us under ordinary conditions against alkali or acid intoxication, so that we can take with impunity a considerable amount of alkali and acid with our food. Here again, however, we are forced to consider the rate of introduction. A certain amount of alkali which is well tolerated when given by mouth may prove fatal when injected rapidly intravenously; and, as Jackson and Smith [9] point out, the acute circulatory reactions following the intravenous injection of alkaline solutions of arsphenamin may be largely due to the excess alkali, which may irritate the myocardium or the blood vessels.

In this connection, I can refer you to some unpublished experiments by Dr. M. I. Smith, which demonstrate the injurious effect of a rapid injection of sodium hydroxid. He found that, in cats, approximately 0.25 c.c. of a normal solution per kilogram of body weight caused a precipitate fall of blood pressure and complete circulatory collapse. These experiments may possibly be of significance in connection with the careless overalkalization of arsphenamin solutions. It would, therefore, seem highly desirable to develop proper buffer solutions to use with arsphenamin.

Again, as regards the colloidal condition of the blood, information is rapidly accumulating pointing to the danger involved from the injection of foreign colloids into the blood stream. Only recently, a death has been reported from the intravenous injection of acacia,[10] a drug which was advocated, during the war, for combating severe hemorrhage and surgical shock. Foster and Whipple [11] have also pointed out that acacia injections decrease the coagulability of the blood and the regeneration of blood fibrin; and Hanzlik and Karsner [12] have demonstrated the production of emboli and thrombi in the pulmonary vessels of guinea-pigs.

In the earliest days of the use of arsphenamin solutions, Wechselmann discovered the so-called "Wasserfehler," an acute reaction of the patient due to the presence of bacterial protein in the water used for making the drug solution. Moreover, Hunt [13] attributes the higher toxicity of freshly prepared arsphenamin solutions, as compared with those which have stood or are heated for a short time, to the physical chemical properties of the former. Colloidal reactions between the drug and certain blood constituents may very well be responsible for these phenomena. Some recent work has shown that arsphenamin solutions approach the true colloidal state; and it is obvious that in a neutral medium, such as the blood, arsphenamin could not exist in true solution, for the reason that the arsphenamin base is completely precipitated at the neutral point. In the case of this drug, therefore, the conditions under which it is used for injection are of the greatest practical importance.

Several instances have come to my attention, even recently, in which the physician used by mistake the hydrochlorid instead of the alkaline solution, with disastrous effect. The injurious action of the hydrochlorid is probably due to the tendency of the hydrochloric acid of the drug to cause intra vitam precipitation of the free base or of a combination of the free base with blood protein. Acids are generally known to cause an aggregation of amphoteric colloids, such as proteins and arsphenamin; whereas alkalis tend to cause dispersion. As a matter of fact, Joseph [14] has actually demonstrated the presence of such arsphenamin precipitates in the blood of animals injected with the hydrochlorid; whereas he failed to find them after the use of alkaline solutions of arsphenamin.

Another possibility for the production of reactions may perhaps be found in the use of large volumes of solutions improperly adjusted as to osmotic pressure. Hypotonic solutions of sodium chlorid given rapidly were shown, by Weed and his collaborators,[15] to cause a great and sudden rise in cerebrospinal fluid pressure. Is it not possible that some of the symptoms which may follow the use of large amounts of drug solutions improperly adjusted in this respect and rapidly injected, especially under pathologic conditions of the central nervous system, could be attributed to sudden changes in cerebrospinal fluid pressure?

To sum up, it appears that a considerable amount of evidence has accumulated in recent years which indicates that the nicely adjusted equilibriums of the blood and those of the easily accessible tissues may be temporarily upset by intravenous medication; and this disturbance may give rise to undesirable symptoms and even cause death.

These symptoms are due to various causes, some of which have already been clearly recognized. In many cases, untoward reactions can be avoided by introducing the drug solution at a slow rate, which permits the protective mechanism of the blood and tissues to operate efficiently; whereas, if the injection rate is too fast, this mechanism breaks down, and symptoms appear as visible results of the disturbance of the chemical or physical equilibrium of the blood and tissues.

9. Jackson, D. E., and Smith, M. I.: J. Pharmacol. & Exper. Therap. **12**: 221 (Nov.) 1918.
10. Olivecrona, H.: Acta chir. Scandinav. **54**: 1, 1921.
11. Foster, O. P., and Whipple, G. H.: Am. J. Physiol. **58**: 393-406 (Jan.) 1922.
12. Hanzlik, P. J., and Karsner, H. T.: J. Pharmacol. & Exper. Therap. **14**: 379, 425, 449, 479 (Jan.) 1920.
13. Hunt, Reid: Some Factors Relating to the Toxic Action of Arsphenamin, J. A. M. A. **76**: 854 (March 26) 1921.
14. Joseph, D.: J. Exper. Med. **14**: 83, 197, 1911.
15. Weed, L. H.: The Cerebrospinal Fluid, Physiol. Rev. **2**: 171, 1922.

Under certain pathologic conditions, this equilibrium is more easily disturbed. I shall only refer to the increased possibility of producing reactions in case of diminished functioning of the excretory organs. It is a common practice to test kidney function before and during a course of arsphenamin or its substitutes, for obvious reasons.

In special cases, previous treatment with a drug which produces a cumulative effect has also to be taken into account. In a case of malignant malaria which is treated intensively with quinin by mouth, it is decidedly dangerous to give the intravenous dose of quinin ordinarily recommended for this purpose without first allowing the patient to dispose of the drug previously given; and this is equally true of the arsenical treatment of syphilis, and of the intravenous use of strophanthin in cases which are under treatment with digitalis by mouth.

Having seen that intravenous medication is not necessarily superior therapeutically to other modes of drug administration, and having pointed out the numerous possibilities of injury to the patient inherent in this method, we should strive to simplify the technic of the administration of drugs wherever possible, in order to avoid the necessity of the injection of the medicament directly into the circulation. The subcutaneous injection of morphin and similar drugs is an exceedingly simple procedure, which very often is left to the attending nurse. Would it not be a great step forward if such drugs as arsphenamin or its substitutes could be given subcutaneously?

During the last year, in collaboration with Miss Dyer, Dr. Johnson and Mr. Thompson, I have studied such a preparation experimentally, and so far it meets all the essential requirements. It is prepared from arsphenamin, formaldehyd and sodium bisulphite; its aqueous solutions are very stable and do not increase in toxicity on standing for twenty-four hours or on vigorous shaking. Its parasiticidal effect is extremely constant, and it does not cause any local reactions if injected hypodermically. The chemotherapeutic index or, in other words, the ratio between the curative and the maximum tolerated dose is as good as in the case of arsphenamin. The drug is now being tested clinically, and, should our hopes be fulfilled, I believe that it will have a considerable effect on the practical problem of the control of syphilis; for it stands to reason that such a preparation would make it possible for physicians who have not the required experience with intravenous arsphenamin treatment to give the treatment in this simple manner, if necessary under the general supervision of an experienced syphilologist, as advocated recently by Stokes.

DISEASE CONTROL AND PREVENTION

I believe that it should be emphasized in this connection that intravenous medication, of necessity, places decided restrictions on the treatment as well as on the prevention of certain diseases, on account of the more or less difficult technic inherent in this method. Take, for instance, the problem of the control and eradication of syphilis; it surely stands to reason that a simple technic of treatment, such as the subcutaneous injection, would make it possible to put a larger number of syphilitics under the controlling influence of the arsenicals; and this would unquestionably help in checking the spread of this disease, and it might also assist in its eradication.

Again, the practicability of the prevention of malaria by means of the oral administration of quinin rests exclusively on the fact that it is possible to produce a prophylactic effect by taking quinin tablets by mouth; and I doubt whether anybody would claim that the prevention of this disease could be made a feasible proposition if quinin had to be injected intravenously for this purpose. Therefore, every effort should be made to render the administration of such drugs as simple and safe as possible, without, however, sacrificing their therapeutic efficiency. Intravenous medication, to my mind, will never serve this purpose, and will always have a more or less restricted field of usefulness.

THE REAL THINGS IN MEDICINE*

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The minimum requirements for a career in medicine are a preliminary education, four years in a medical school, and a license to practice. While these requirements are indispensable, they are by no means sufficient. Three higher attributes stand out as real elements that make for a successful physician; without these, real success in medicine is impossible: brains, culture and character.

BRAINS

Brains are the alpha and omega of the man of medicine. We all recall the artist who, when asked what he mixed his paints with, replied: "With brains, sir." Not long ago when I was on the way to talk to college students on medicine as a profession, the wife of one of the faculty said: "Tell them that the one thing they ought to have is brains." She had made my speech. To begin the study of medicine without two good cerebral hemispheres thickly covered with a deep cortical layer is to invite failure. No encouragement should be extended to those about to enter the profession of medicine or to those already in to continue, unless they are supplied abundantly with gray matter. The misfits in medicine, as well as in other occupations, are due largely to a lack of understanding. There are some in the cornfield who ought to be in medicine; there are some in medicine who ought to be in the cornfield.

The study of medicine bestows no more brains and adds not one cubit to the mental stature. It provides only a few more implements of the mind to be used for good or for ill. Unless the roots are deeply planted in the soil of real learning, the study of any science narrowly pursued takes away from the natural resources of the mind more than it puts in. In other words, a finely endowed intellect is needed to carry on in the realm of science, to withstand its temptations toward the illogical, to keep clear headed in the midst of fact and fancy.

Such endowment comes not from science itself; it issues permanently from a mind nurtured in the ways of thinking. The handmaiden of brains, essential for the physician, is common sense, which is simply the ability to put brains to good account. In the words of Holmes, "Science is a first-rate piece of furniture for a man's upper chamber if he has common sense on the ground floor. But if a man hasn't got plenty of good common sense, the more science he has the worse for his patient."

* President's address, read before the Medical Society of the State of North Carolina, Winston-Salem, April 25, 1922.

CULTURE

Make no mistake about culture. Culture is refinement, accuracy, poise, resourcefulness; it is not effeminacy, weakness, conventionalism, impracticability. We have been getting too far away from the humanities, from classical education, from academic scholarship, if you please. In the quest of science—and there is no nobler pursuit—we have set up utilitarian courses, called premedical and certainly premeditated, for the purpose of reducing to a minimum all those things which do not bear directly on the matter in hand, and swelling to a maximum those that are concerned in the material things of medicine. In this we have left out the very bed rocks of learning: the capacity to interpret the phenomena and the power to express the findings. If the average trained laboratory worker in our country today has any weakness, it is his inability to convey his ideas, to put down what he has done, to express his results in terms clear and terse. Generally his work surpasses his words. And it is not the misfortune of the individual, but of the plan which essays to substitute scientific research for sound scholarship; to get the one without the other, when we may have both. It is the common failing of the later generation of medical men that they do not write so lucidly or think so accurately as those just before them. There are, of course, numerous and notable exceptions. But the observation is probably correct, and its explanation lies in the small stress placed on actual scholarship required of one entering the profession of medicine.

We are living in an age of inaccuracy. We are inaccurate in thought, in speech, in spelling, in writing. We know a great deal; but do we know anything very well? Short cuts and practical preparation are the order of the day. Language, the only medium through which thoughts are given out, has been almost forgotten. Will it be considered very old fashioned if I should suggest that the neglect of the languages, and particularly the banishment of Greek, may be responsible for our loose thinking and our lack of scholarship? The value of Greek for the medical student might be a theme for a discourse in itself. If you should go over the evidence, you would be surprised to find how much medicine owes to the Greek language, what a very large number of our words referring to diseases, operations and organs are derived from the Greek—fully as many as from Latin. And many of those coming through the Latin were taken originally from Greek. "We suspect, too, that our men of science who are supposed to be opposed to 'so much Greek' must study that language secretly or they assuredly could not name the tools of their own trade."[1] The chief advantage of the study of Greek is a training in accuracy, in the expression of nice shades of meaning, the very essence of a cultivated mind engaged in scientific thought. We cannot divorce science and culture; we cannot go on rearing a race of seekers after truth who are not trained thinkers; we cannot fail to perceive that the education of a candidate for a learned profession means for us, as it has meant for all the older nations, a thorough grounding in the ancient and honorable arts and classics before we approached the special study needed for our dignified calling. That way trod our great fathers, who outstripped us with the means at their disposal; that way lies our hope of elevation, of bringing back the well rounded medical man and adding to him the marvelous scientific attainments of the present age. My thought was expressed by Thomas L. Stedman,[2] in these words: "Some day the pendulum will swing the other way and a new renaissance will once more join culture to knowledge to make the perfect physician."

1. London Saturday Review, Aug. 16, 1913.

CHARACTER

Detracting not one whit from the appeal for better mental equipment, it appears even more timely to emphasize the greater need for moral qualification in the physician. By this no reference is meant to righteousness or to worlds to come, to religion or to denominationalism, but only to the possession of a sound moral sense. The character of a physician is his most priceless property. It is what he stands for and whom he stands with; it is his attitude toward life; it is "what God sees him do in the dark." Truth is the goal; it develops character, and character tells in one's work. Too many are entering the medical profession without good working consciences, without a keen appreciation of the difference between right and wrong; too many are coming into an honored and honorable calling with low standards of trade and traffic in their souls; too many get in who are not gentlemen to begin with and cannot be made gentlemen to end with. Today the young physician too frequently feels compelled to ask his associates, "What do I get out of it?" when he might better ask himself, "What am I putting into it?" Greatly to be desired is a stronger effort to train the moral perception of medical students. They must be inspired toward a high-minded estate. In the speech and bearing of graduates of certain medical schools can be recognized just exactly the outlook on life and the regard for our profession held by their teachers. It is an unconscious percolation. The fine sense of intuitive right-thinking and truth-loving can shine through both precept and example. Morals cannot be legislated into people; but ideals can be educated into them.

PREPARATION FOR THE PRACTICE OF MEDICINE

My tribute to science is the greater because of my contention for broader preparation before embarking in its service. I heartily join with Moses Harvey in saying that "science is teaching man to know and reverence the truth and to believe that only so far as he knows and loves it can he live worthily on earth, and vindicate the dignity of his spirit." Medicine is both a science and an art; it has to do both with knowing and with doing. It is not an exact science—more's the credit, for exact sciences are inert and uninteresting. But the one big asset for the medical man is the acquisition of the scientific attitude in his student days. Every physician should remain a student the whole of his natural life. A pitiable sight is the practitioner who was known as a "good student" but who, after five years more or less, has degenerated into a routinist, never reviewing his former knowledge or adding to his original store. Such a man, though perhaps skilled in so-called practical affairs, forgets more and more medicine each year, until finally it is difficult for him to keep up. He begins to decry theory and to extol practice; he thinks only of results and never of causes; he speaks magnificently of "common sense" and "letting Nature take its course," but rarely uses the one or permits the other.

The trouble with this type of person is that he has never acquired the scientific spirit. He fell short in the

2. Stedman, T. L.: A Practical Medical Dictionary, New York, William Wood & Co., vii.

early approach and missed the mental hole. The eager student loves learning for its own sake and believes that no knowledge is useless, if it is correlated. He understands that science is organized knowledge. The scientific attitude means that nothing must be accepted unless it is known; that nothing can be known until it is approved; that everything shall be met in the spirit of hesitant belief. This smacks of pessimism, and one poet at least has been led to exclaim:

> O, star-eyed science! Hast thou wandered there,
> To waft us home the message of despair?

But nothing could be more unjust. It is not despairing to search for the truth. The challenge is, "How much do you know?" and "How can you prove it?" The doubting Thomas has a place here.

What has no place in science is the *post hoc, ergo propter hoc* habit of mind. It is the most dangerous of all doctrines for the medical man. It is the rankest empiricism and furnishes the platform for all quacks and impostors. "Whereas I was blind, now I see" is an insidious appeal to effects in utter disregard of the means—the cry of the charlatan. Montaigne wrote that when a man is sick and gets well, he cannot say whether it was because of the remedies used, the lapse of time, or his grandmother's prayers. It requires a powerful mental effort to get away from the belief that whatever happens after an event is always on account of it; but we must get away from this belief or we shall not retain our clear thinking.

After all, it is the acquisition of knowledge which is enticing and inspiring, not merely the possession of it. "If I held truth captive in my hand," says Malebranche, "I would let it fly that I might again pursue and capture it." And it is well to remember that not all the new is scientific, nor all the old empiric. Science teaches us to unlearn many things each day and to relearn as many the next; for there is scarcely anything new except what has been forgotten.

GROUP PRACTICE

A turn in the affairs of medicine is just before us. Whether that turn will be toward new and untried fields or along some old and well-worn paths, the future—the near future—will determine. The struggle is on between medicine as practiced by the private physician in the time-honored relation, and the practice by groups in a collective fashion. No matter what may be the arguments on the one side or on the other, the situation will work itself out precisely in accordance with the desires of the public, the results of methods in use and the attitude of physicians.

Owing to the multiplicity of technical detail and the accumulating mass of new discoveries in modern science, it is now more than ever true that no man diagnoseth to himself. It was never true that any one man, looking at the patient through the peephole of his slender specialty, could compass a complete diagnosis, or that a cursory inspection in the old way by the ordinary practitioner would round out a survey of the case. But always there has been a demand for the man who could find out everything there was to know about his patient, whether or not he himself could carry out all the detailed investigations and therapeutic indications. The main reason for requiring assistance in the diagnosis of disease is the need for particular apparatus, in the use of which some are skilled, to elucidate findings not brought out by the general physical examination. Thus grew up specialism and thus were developed instruments of precision. But there never has been, and never will be, anything to take the place of cultivated brains and trained special senses. This dual instrument, ready for instant and proper use, will be found as the principal equipment in the office of the real physician. Hear a layman's view:[3]

> The real pest among reputable physicians is the young man who expects his patients to pay for his needlessly high overhead expenses. He may be known by his spacious and elaborate offices and waiting rooms, buttoned door boys, sleek secretaries, fluttering office nurses and powder monkeys of both sexes, and an all pervading shimmer of white enamel, mechanical novelties and glittering metal work. Not infrequently the young practitioner who indulges in all these fripperies is trying to put over a poor piece by costly stage effects. He sometimes forgets, and his patients still oftener fail to realize, that what he really has for sale resides in his own cranium, and that mere style, atmosphere and scenery are poor substitutes for knowledge, experience and technical proficiency.

Unguided by intellect, instruments of precision become instruments of confusion, for they are not infallible and are wofully subject to the human equation. Rightly used and rigidly interpreted, they mean much in proving a diagnosis; regarded as the only means in arriving at conclusions or depended on as unfailing agents, they are but disappointments. Great pity should be felt for the inexperienced beginner who expects his microscope, his hemocytometer, his cystoscope, his chemical reagents and his metabolimeter to solve all the mysteries of diagnosis and to spell accurately the name of the disease. If I should see any such, I would say: "Let us first take a look at the patient; use our minds in obtaining his story; perform a laying-on of hands; after which we will ask for the aid of scientific apparatus which may either confirm or reject our observations. And if the laboratory findings do not agree with the clinical signs, then so much the worse for the laboratory."

And what will become of our specialism? Where will it end? Will there be need for its regulation and control? Undoubtedly the existence of specialties is the proof of their necessity, and their development has been the crowning achievement of modern medicine. But increasing subdivisions of specialism give us pause, so much so that by reaction we are beholding a newer specialist—the general practitioner. He is in a class by himself, left in charge of those who are actually sick, with the issues of life and death on his hands, both early and late. He is the keystone of the medical arch; without his support the whole fabric would fall; family after family are depending on him for counsel, relying on his judgment in every crisis. Of what use are specialists unless there is the intermediary to say when they are needed? And since the general practitioner has by distinction become a specialist and expected to know a little about everything, why should not the professed specialist be required to know something of general medicine? One finds oneself somewhat in agreement with the recently suggested proposal that examining boards may require five years in general practice before allowing the privilege of going into a specialty. How else may be curbed the tendency to divide the body into compartments for seclusive attention without a working knowledge of the whole system? These questions also will furnish their own answers.

3. Saturday Evening Post.

Many are rushing into group medicine as a solution of the whole matter. Such practice brings to bear upon each case the combined study of a number of specialists, who, examining the patient individually, finally come together for establishing a complete diagnosis, or leave it to one member of the group to pronounce the judgment. Work in groups has come to stay; for it is inevitable that men will associate for mutual help and encouragement. Team work is the modern slogan, and it is the way to win the game. But if the group discounts the individual and the individual forgets the patient, we have, not group medicine, but gang medicine; and their product is syndicated science, than which nothing could be more unscientific. One very notable group clinic and several others of lesser fame and more recent date have served to popularize the combined method of practice, and diagnostic groups are springing up all over the land. There are some with only two men in them (reminding us of the close corporations in which one partner is the president and treasurer, and the other, vice president and secretary), and others containing scores of men; there is the peripatetic clinic, in which taxicab fare is a considerable item; there are those conducted under one roof either of a separate institution or on one floor in an office building; there is the community hospital with its broad choice of consultants and naturally a subgrouping among these. While there is much to be said in favor of any form of associated effort, certain fallacies and dangers lurk in group practice. Primarily it is well to recall that "a chain is no stronger than its weakest link," and unless the men on the team are of equal capacity in their several branches, the resultant report will be onesided. There is danger, too, of everybody's business being nobody's business, so that the diagnosis produced may be a compound of the average forces of a factory, ground out piecemeal. An impersonal mark is likely to attach to all such methods to rob the process of any human touch and to afford the greater chance of error, especially if the interpreter for the group sees the patient only for a short sitting on the last day of the ordeal. Of necessity, the head of an important group is compelled to be a genius in his sphere, and all groups which have succeeded scientifically have had such heads.

Free and frequent discussion has waged over the group question and its allied problems. My feeling is that the group idea is one of the most useful modes of service in medicine. But no group should be iron clad or unwieldy; its tendency to send out machine-made work should be changed into that of a hand-picked product; it should stop straining at gnats and swallowing camels, and learn that the group was made for the patient, not the patient for the group. Just as strongly should we realize that the practice of medicine will never—and should never—get away from the personal relation of patient and physician, and that always we shall depend for our health and our happiness on the daily visits of the physician from house to house,

> Battling with custom, prejudice, disease
> As once the son of Zeus with death and hell.

ADJUSTMENT TO CHANGING CONDITIONS

A spirit of uncertainty pervades our rank and file. The existence of a subconscious fear that something or somebody will take away pristine rights, privileges and emoluments cannot be doubted. Nor can it be denied that this fear is natural and justified by appearances. What with welfare boards, full-time instructors in health, community service, vital statistics laws, narcotic restrictions, prenatal clinics and the like, physicians have begun to feel that they are "preached to" overmuch, that they are "regulated" beyond endurance, and that their confines are being invaded. Such expressions are heard in different quarters from time to time. Much as we may sympathize with them, the truth is that the fear which they denote is unfounded. We shall not lose anything unless we divest ourselves of it; we shall not have anything taken away from us, unless we prove unworthy to keep it; we shall not fail to receive any reward unless we sidestep the labor and the waiting necessary to secure it. The only harm that can come to us is the harm we may do ourselves by sins of omission and commission. The upsetting questions most of us are asking ourselves are: What are we going to do about it? where will the encroachments cease? how shall we adjust ourselves to the inevitable conditions? I will tell you what we are going to do: We are going to change, to progress. We shall go forward; we will meet and master every disturbing difficulty.

I have appealed to the fellows of the various component societies to keep in mind the county as the unit of organization and to remember that, for our common interest, attendance is the keynote, and cooperation the watchword; I emphasized the importance of the district societies and approved of plans to conduct their meetings according to a definite program, regarding them as miniature state societies; I sought to dignify the position of councilor, to exalt the duties of this officer, representing as he does in his district the power and influence of the parent organization. Finally, each member was urged to feel that the whole structure of organized medicine in state and nation hinged upon his own local status.

CONCLUSION

I have an ideal to express for this society. First, I would have it conform in every particular to the specifications set forth in Article II of the constitution, adopted in 1903, which stated that "the purposes of this society shall be to federate and bring into one compact organization the entire medical profession of the state . . . with a view to the extension of medical knowledge and to the advancement of medical science; to the elevation of the standard of medical education and to the enactment of just medical laws; to the promotion of friendly intercourse among physicians, and to the guarding and fostering of their material interests; and to the enlightenment and direction of public opinion in regard to the great problems of state medicine; so that the profession shall become more capable and honorable within itself, and more useful to the public in the prevention and cure of disease, and in prolonging and adding comfort to life." I would have this society embody these principles in the conscience of its every member, especially recalling the significance of the order in which the principles are presented; I would have it a place where righteousness reigns and no mean thing may live; I would make it a guild and not a trade union; I would keep it a haven where politics doth not enter and where selfish exploitation doth not corrupt; I would wish every one to think of not what the society is to give him, but what he is to give the society; I would want it a communion where freedom rules, where each fellow may have the aspiration and the opportunity to develop what is in him; but I would also carry its standard so high that we may

draw all men up to it and never for one moment trail its colors in the wretched dust of the unqualified and the unfit.

We have every reason to feel encouraged. My note is one of optimism. If only we may glorify brains as the consummate need; if we reverence culture as a means of grace; if we set character above circumstance, then indeed shall we grow in capacity, refinement and virtue, assuming our rightful stations as devotees of a learned profession and champions of the real things in medicine. We cannot fail, we cannot lag behind, if we serve these purposes. May we not all stamp deep down in our minds and hearts the cheering message of our first president, the immortal Strudwick, who, seventy-two years ago, gave voice to these lofty words:

> Neither the apathy of friends, the cold neglect and deep injustice of legislation, nor pampered quackery and empiricism can stay its onward course. True medical science will, like the majestic oak, withstand the shock and storm of every opposition. It has been beautifully compared to a star, whose light, though now and then obscured by a passing cloud, will shine on forever and ever in the firmament of Heaven.

SIGNIFICANCE OF THE EXTRINSIC MUSCULATURE OF THE LARYNX

ITS RELATIONSHIP TO CERTAIN DISORDERS OF THE VOICE *

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During the twenty-four centuries of historical knowledge of the developments in laryngeal physiology, long periods, even of centuries, have elapsed during which no advancement in knowledge of the laryngeal function is known to have been recorded. And it may not be without a useful purpose to note here that evidence is not wanting to cause one to wonder whether the laryngologist may not now be passing through one of these listless, or self-satisfied, periods with respect to laryngeal physiology. An examination of numerous recent laryngeal textbooks and general physiologies seems to warrant such a fear. One turns over the accounts of the physiology of the larynx in textbook after textbook without encountering any reference at all to physiologic knowledge of the larynx of the first importance, knowledge already nearly or quite a half century old. Such neglect of the very bases of laryngeal knowledge can but serve to retard progress in certain phases of laryngeal therapy.

If we are to understand the function of the larynx, it is first necessary to understand what the larynx is, both anatomically and physiologically. The anatomic definition is arbitrary and limits the meaning of the term to the laryngeal box itself, including the epiglottis. But a physiologic definition admits of no such arbitrary limitation. The physiologic larynx must be defined as the entire physiologic mechanism on which the movements of the vocal cords depend.

The laryngeal box is not only a suspended organ, movable upward and downward (through a range of about 3 cm.) and in all other directions, excepting directly forward, to an important though limited degree; but it is movable only with, and as a part of, the hyoid bone, and the base of the tongue, and even of the lower jaw and floor of the mouth. Particularly, the larynx, hyoid and base of the tongue cannot but be considered as a physiologic entity. The larynx is suspended from the hyoid bone, the hyoid from the base of the tongue, the tongue from the lower jaw and the skull. All three are intimately involved in a complicated musculature whose action alters their relationship to each other and to the fixed bony structure of sternum, spinal column and skull. The component parts of this musculature are so numerous and the musculature is so complicated that a complete understanding of the combined movements requires much more investigation than has been undertaken up to this time. But one fact is not hard to make out; namely, that all parts move together and in harmony to produce even the simplest attempt at phonation by the vocal cords. They constitute definite factors in vocal cord physiology and all must be considered as belonging to the physiologic larynx.

The first definite statement which I have found in the literature, conveying the thought that extrinsic muscular action is *always* an accompaniment of vocalization, is that made by John Wyllie,[1] in 1886. In discussing the mechanism of pitch production, he says, "The position of the larynx varies with every note."

Reliable studies of the relationship of the extrinsic muscular action to the movements of vocal cords were made by Brücke,[2] in 1856, von Meyer,[3] in 1884, and John Howard,[4] in 1886, as well as by others.

Nature approaches the problem of vocal cord action in no partial or haphazard spirit. She approaches it rather with all the needs of vocal and musical physiology well in mind. The demonstration of this truth lies in the fact that no central nervous plan of laryngeal action has been provided, excepting that which compels the coordinating action of all the complex musculature of the larynx, both intrinsic and extrinsic. We, as human beings, are not afforded a nervous control of the intrinsic muscular mechanism alone. The nervous centers of vocalization which we may employ are only those which control the fifty or sixty distinct muscles, intrinsic and extrinsic, all of which must function for the simplest vocal act.[5]

The fact that combined action of the intrinsic and extrinsic muscular systems of the larynx is necessary for vocalization is further demonstrated by their instinctive united employment in producing the laryngeally produced crying sounds of the babe as he enters the world.

Only by harmonizing these two great physiologic facts, the production of voice by the adjustment and vibration of the vocal cords, immediately due to the action of the intrinsic muscles, and the constant coincident extrinsic movements of the laryngeal musculature, is it possible to understand the physiology of the larynx.

The immediate basis of vocalization lies in the manner of adjustment of the vocal cords to each other. Definite adjustments of the cords for pitch production

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* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

1. Wyllie, John: Disorders of Speech, 1886, p. 475.
2. Brücke: Grundzüge der Physiologie und Systematik der Sprachlaute, Vienna, 1856.
3. Von Meyer, G. H.: The Organs of Speech, New York, 1884.
4. Howard, John: The Physiologic Basis of Artistic Singing, Boston, 1886.
5. The motor centers for the speech function control, at the same time, the function of chest contraction and expansion. If the muscles of the chest were included in the foregoing estimate, it would be found that the action of approximately 100 muscles was required for the production of any manner of vocalization.

through a range of about two octaves is required. At the same time, definite adjustment of the vocal cords for the production of overtones suited to each voiced sound (if not also to each voiceless sound) must be provided. When one realizes that the mechanism of adjustment for each voiced sound must be able to maintain itself through a long range of pitch elevation and depression, one may begin to comprehend the complexity of the required vocal cord adjustments. They must be almost infinite in number. Differences of tension, of thickness, of adaptation of parts, of manner of vibration, must succeed one another endlessly. None excepting a human mechanism could begin to have such complexity and diversity of action. Each muscle, intrinsic and extrinsic, must play its related part, ever changing in action as the need changes, cooperating with a more or less strength of action, much as each instrument of a large and finely governed orchestra must adapt its action to the instrumental purpose of the whole.

If one now also conceives of the other aspect of the production of speech and song, that of enforcing through resonance the sounds created in the larynx, and if he realizes that a part of the extrinsic musculature which is concerned with vocal cord adjustment is employed also for resonantial adjustments, one is in a position to realize the full complexity of this function. The object of resonance adjustment is to so shape the movable walls of the resonance spaces as to adapt them, in size and form, to best reinforce the overtones already definitely produced in the larynx. Thus, the base of the tongue and the hyoid musculature is ever conforming its action to the needs of the vocal cord adjustments; at the same time, never forgetting its relationship to resonantial adjustments.

Certain larger principles of action of the extrinsic musculature of the larynx may be expressed thus:

1. The extrinsic musculature may be roughly conceived as determining the larger relationships between thyroid and cricoid cartilages, and, thus, between thyroid and arytenoids, while the intrinsic musculature determines the finer adjustments of the vocal cords themselves.

2. Each plan of adjustment between cricoid and thyroid alters the relationship of each of these cartilages to its next neighbors and requires new muscular adjustments to meet this alteration, and so on to the next neighbor, until the fixed bony structures have been reached. Each muscle of the entire system must thus enter into the plan for any particular vocal cord adjustment.

3. The entire suspended mechanism must be steadied with respect to each element in the series, and all must be steadied against the fixed bony structures.

4. The question of resonance spaces for the various sounds of the language, as well as for musical purposes, must ever be given attention, in part by many of the muscles that require adjustment to the needs of action of the vocal cords themselves.

The aphonic voice (which appears to correspond with the whispered voice) is also produced by the combined action of the entire laryngeal physiologic musculature. Brücke was the first to point out that the whispered voice had its origin in the larynx. While the exact action of the intrinsic structures of the larynx for the whispered voice is less clear than that for the loud voice (which also is largely a matter of surmise), it is evident, at any rate, that, while the mechanism of adduction is more or less in action, the mechanism which tenses the vocal cords is not in action. The sound that is produced in the larynx in whispering is that of air passing over vocal cords, usually, at any rate partly, adducted, but not accurately stressed.

The extrinsic musculature is likewise in action for the whispered voice, in general corresponding to the action of this musculature in the production of the loud voice, but in certain details differing from it. The most striking difference in the action of the extrinsic musculature is its intensity of action (as determined by palpation) in the production of the loud voice as compared with its light action in the whispered voice. But another striking difference is the uniformly high position of the thyrohyoid region in the production of the ordinary whispered voice, as compared with the low position in the corresponding loud voice.

The high position of the thyrohyoid region required for the production of the higher pitched sounds, as compared with lower pitched sounds, whether loud or whispered, is a matter of common knowledge. Its explanation has received considerable attention and doubtless requires much more. Its chief effect seems to be to tilt the thyroid cartilage on the cricoid, thus increasing the distance beween the two ends of the vocal cords.[4]

Normal adduction of the vocal bands is both neurologically and physiologically a very different procedure from abduction. Physiologically, adduction demands action not only of the adductor intrinsic musculature but also of the entire extrinsic musculature. Neurologically, it demands the innervation not only of the recurrent and superior laryngeal nerves, supplying the intrinsic musculature, but also of all the nerves supplying the fifty and more extrinsic muscles.[6]

On the other hand, abduction consists simply in the relinguishment of the adductor activity, and the outward movement of the cords under action of intrinsic muscles alone. Abduction depends, then, solely on the recurrent laryngeal nerve for its innervation.

In explaining some practical diagnostic and therapeutic uses which a knowledge of the extrinsic musculature of the larynx affords, it may be said that these uses are founded mostly on two facts: (1) that any large abnormal activity of the extrinsic musculature is determinable by palpation; and (2) that general determination of the management of this musculature is partly under control of the will.

The pathologic aphonic voice may, as all laryngologists know, result from two main causes: (1) local intrinsic conditions which prevent the approximation or else prevent the tensing of the vocal cords, although the general physiology of adduction be otherwise operating normally, and (2) failure of the cerebral centers for the loud voice to function. In either case, the quality of the tone becomes whispered, or aphonic.

Much confusion may be avoided in making the differentiation between these two pathologic conditions, if we bear in mind that the aphonic voice from central causes may be readily and definitely diagnosed by palpation of the thyrohyoid-base-of-tongue region, while the patient is phonating. In case of aphonia from central causes, one may thus readily learn that

6. Not to speak of the nerves supplying the compressive muscles of the chest, which must also act in harmony with the adductor mechanism.

the mechanism for the loud voice is not functioning, but is being replaced by the mechanism for the whispered voice; while, if the cause of the aphonia is due solely to local intrinsic laryngeal causes, the extrinsic mechanism for the loud voice will be found by palpation to be operating, although the voice is whispered. One, of course, must be on his guard against the possibility of both causes, local laryngeal and cerebral, being in operation at the same time.

The falsetto voice of puberty, which is dependent on psychologic misconception, or disturbance, consists in the maintenance, by sheer muscular wrongness of action and overaction, of a strained speaking voice higher in pitch than can be normally produced by that particular vocal apparatus. The condition may usually be diagnosed by the thin, strained, monotonous, excessively high pitched quality, in connection with the history. But for confirmation and clarification of the diagnosis, especially if a doubt exists, and also for purposes of treatment, the external musculature of the phonating larynx should always be palpated. In the production of the normal voice, this mechanism acts with a free upward and downward action of the thyrohyoid structures, dependent on the sounds being produced, and the pitch of their production. But, in the habit tensed falsetto voice, these structures are held constantly and rigidly against the highly raised base of the tongue. The entire physiologic musculature is thereby compelled to operate under the handicap of a muscular mechanism steadily and rigidly overacting to produce a false high pitch. This faulty mode of action is readily diagnosed by intelligent extrinsic palpation.

The correction of the falsely produced voice in this disorder is dependent on the education and training of the sufferer to direct normally the physiologic muscular mechanism. In early cases, this is usually relatively easy. In cases of long standing, with the resulting weakness of insufficiently used muscles, and the fixedness of long habit, the return of the voice to normal requires both time and vocal knowledge. In any case, the consideration of the extrinsic musculature serves best as a basis for the training required for correction. The patient is taught to compare by palpation the action of the normal larynx with that of his own. With this knowledge as a basis, he is taught the art of lowering the position of the larynx while talking, as a concrete necessity for the lowering of the pitch.

In still another class of disorders of the voice, dependent on emotional causes (and not as yet, so far as I know, given a description or classification in the literature), one meets with a similar tendency to strained upward action of the elevators of the larynx, and here also, from both a diagnostic and a therapeutic standpoint, a specific knowledge of the extrinsic physiologic laryngeal musculature is important.

Finally, in dysphonia spastica, similar phenomena in the external musculature are observed, but in a more severe and uncontrollable form than in any manifestation of a similar disturbance. The moment such a patient starts to talk, an intense uncontrollable overaction of the elevators of the larynx takes place, constituting the dominating musculature feature of the disturbance. A concrete understanding, through palpation, of the faulty action of the extrinsic musculature has much the same diagnostic and therapeutic use and importance as in the habit-produced falsetto voice. I have recently succeeded in bringing about recovery in a case of this character (where recovery is very rare), through a plan of training, founded largely on teaching the patient how to control the extrinsic muscular mechanism.

The finer control of the voice, especially for artistic purposes, is dependent on three primary factors: (1) the maintenance, by trained action of the chest musculature, of a controlled and adequate air pressure against the vocal cords; (2) the trained coordination of the entire laryngeal musculature, extrinsic and intrinsic, to adjust the vocal cords to receive accurately and adequately the air pressure from the lungs, and (3) the accompanying adjustment of the same and related musculatures to so shape resonance spaces that they shall give proper resonance values to the sound vibrations produced by the vocal cords. Strength of muscle, accuracy of action and trained control, all to a definite end, are the needs. And the muscles thus employed are extrinsic as well as intrinsic. Delicate harmony of action of the entire vocal musculature is required. Consequently, relatively delicate disturbances, even at a distance from the larynx itself, if they occur in the region of the extrinsic musculature, may disarrange the voice. For example, disturbed sensations confuse the speaker, or singer, in his attempt to make the required delicate muscular adjustments. Adherent secretion in the pharynx and nasopharynx may seriously impair the vocal control.

Any manner of interference with muscle normality anywhere in the entire physiologic larynx may confuse the vocal procedure. For example, inflammatory edema of the pharynx, nasopharynx, base of tongue, or tonsils, by invading the muscle structure or by pressure on muscle, may serve to disarrange the physiologic laryngeal action.

SUMMARY AND CONCLUSIONS

1. The physiologic larynx includes all muscles, extrinsic as well as intrinsic, on whose movement vocal cord action depends.

2. The laryngeal box, the hyoid and the base of the tongue are closely involved in all vocal action.

3. The base of the tongue region especially is concerned not only with laryngeal action, but also, at the same time, with the shaping of reasonance spaces.

4. This complete complicated musculature has for its purposes: (1) the production of endless differences in the manner of vibration of the vocal cords, and (2) the shaping of accurate resonance spaces for the reenforcement of vibrations produced in the larynx.

5. The action of the extrinsic musculature is discernible to an important degree by palpation of the thyrohyoid region.

6. Diagnosis of aphonia from cerebral causes is readily made by such palpation.

7. In the habit-produced falsetto voice, the high tension voice resulting from emotional causes, and in dysphonia spastica, a knowledge of the external musculature is important from both a diagnostic and therapeutic standpoint.

8. Physiologic normality of the voice, and especially of the artistic voice, is dependent on normally acting and cooperating individual muscles within the entire physiologic laryngeal mechanism; and abnormality of voice may result from disturbed sensation or disturbed action of muscles anywhere within this territory.

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ABSTRACT OF DISCUSSION

DR. CHARLES G. STIVERS, Los Angeles: It is time to correlate and coordinate all of the scattered knowledge on the vocal functions into a more cohesive whole, that investigators may know where to look for the latest advances and enjoy that moral support which is essential to all workers in the field of human betterment. The need for voice specialists is being expressed by our own members and by the laity—singers, actors, teachers of vocal expression and others, who feel, from sad and costly experience with so-called "vocal professors" and near-specialists, the need for the adequately trained voice specialist. I recently heard a prominent otolaryngologist say that the time would come when we would have as accurate an estimate of voice ability as is now possible in estimating the loss of hearing, and to do so calls for a standard of sound. The treatment of the falsetto voice of puberty resolves itself into a reconstruction in the patient's mind of his conception of how his voice should be produced. It is really a psychologic approach, and it affects a readjustment in the patient's mind, so that his voice becomes placed where it should be in the adult register.

DR. LOUIS K. GUGGENHEIM, St. Louis: I should like to ask Dr. Kenyon just how he differentiates central from peripheral involvement by putting his hand on the patient's neck. As I understand it, he attributes the falsetto voice of puberty to the emotional state occurring at that period. I believe it has been definitely proved that the falsetto voice of puberty is the result of definite changes in the tissues of the larynx, chief among which changes is an edema. This edema does not permit the full vibration of the cords, but merely the vibration of the edge of the cords.

DR. JACQUES HOLINGER, Chicago: There is an answer to Dr. Guggenheim as to the central cause of the difficulty of swallowing. In bulbar paralysis, the only symptom is difficulty in swallowing and, maybe, of phonation. This may be recognized by watching the larynx during the act of swallowing or phonation or by putting a finger on it. The larynx moves very little or not at all in cases of paralysis. You have practically a diagnosis at first hand. Bulbar paralysis in old people is not very rare, but I could not find in any textbooks that epidemic cerebrospinal meningitis in children should start with bulbar paralysis. Permit me to give you a history: I was called to see a girl of 11 who had been sick four days. A brother, 9 years old, had been sick for several weeks with a "cold," and was just recovering. No diagnosis was made. The girl talked indistinctly and had some difficulty in swallowing, but sat up in bed and played. She had an anxious expression and her temperature was 100 F. I asked the child to phonate, placing my finger on her throat. She had a peculiar, monotonous voice. In this, as also in swallowing some water, the larynx was not raised. The water went into the larynx and had to be coughed up. I suggested a lumbar puncture. The suspicion of cerebrospinal meningitis was confirmed. Flexner's serum was given, but three days later she became unconscious and died. I repeat that, at the time I first saw her, there was no other symptom except the difficulty in swallowing and phonation. It was very apropos that Dr. Kenyon took this occasion to draw attention to this whole complex of throat symptoms. They are not very frequent, but when they are observed, they always indicate some serious central lesion. They are very easily overlooked or misinterpreted.

DR. DENNIS J. MCDONALD, New York: I should like the author in closing to stress particularly the falsetto voice. We all know there is a maldevelopment of the larynx which produces a thinning of the voice. There is also a condition in the female in which the voice runs from D above the line a whole octave, treatment for which by a great many of our teachers practically ruins the voice. Many of these cases, I think, are due to strain.

DR. ELMER L. KENYON, Chicago: That there can be no organic changes in the structure of the larynx at the time of treatment in most of these cases of high pitch maintained after puberty is perfectly clear; because under training treatment which is adequate, a voice high and strained comes to normal pitch and quality very rapidly. I have no doubt there are exceptions, cases in which structural changes in the larynx have had some influence in bringing about an erroneous habit of producing a high pitch. Indeed, a considerable portion of such children have had persistent "colds" during the puberty period, when the voice should have been changing. The child whose voice is being trained for a singing voice and who is not taught at puberty that the voice must change in pitch and quality may struggle to maintain the childish vocal characteristics until a wrong habit has been formed. Answering Dr. Guggenheim's question as to the technic of the determination of the aphonic voice by palpation, it is extremely simple if one only possesses a clear knowledge of how these extrinsic laryngeal structures act under palpation in the normal person. He must know by palpation the manner of action and especially the vigor of muscular effort required to produce the normal (*a*) loud and the (*b*) whispered voice. The loud voice requires muscular vigor of action, causing vibration; the whispered voice clearly requires less vigor and less definiteness of muscular action. The pathologic aphonic voice is apparently nothing else than the normal whispered voice substituted for the loud voice. These differentiations are easily determined by one who studies the action of the extrinsic musculature under palpation. As to Dr. Stiver's suggestion that the falsetto voice is basically a matter of psychology, I perfectly agree. Treatment is a matter of changing the person's attitude of mind with reference to his voice; it is a matter of teaching him that he handles his voice wrongly, and teaching him how he must handle it. The use of this knowledge of the manner in which the extrinsic musculature acts under normal and abnormal conditions is an important detail in enlightening the person with the falsetto voice with respect to the fact that his attitude toward his voice production is wrong.

OTALGIA AND MASTOIDALGIA NOT INDICATIONS FOR OPERATION ON THE MASTOID PROCESS

REPORT OF THREE CASES *

HAROLD I. LILLIE, M.D.
ROCHESTER, MINN.

Otalgia and mastoidalgia, pain in the ear and in the mastoid region, referred in origin and not due to inflammation or new growths, have been encountered in our practice in cases in which operation on the mastoid had been either advised or performed. It was quite apparent that the results, so far as relief of the patients' discomfort was concerned, had not come up to their expectations.

The conditions causing this referred type of pain do not appear to be generally understood. Wilson says, "In the ear, with its nerve supply from many sources, pain not only suggests the region particularly involved in the inflammatory process, but also makes a constant demand upon the physician to deal with referred pain and to interpret its significance." A careful examination of the mechanism of the ear with a head mirror and reflected light will eliminate the idea that inflammation causes the pain in the ear and mastoid, particularly if adjunct information is derived from a careful study of stereoroentgenograms of the mastoid, and from laboratory examinations, including the leukocyte count, and so forth.

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* From the Section on Otolaryngology and Rhinology, Mayo Clinic.
* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

It is quite true that the descriptions of otalgia and mastoidalgia in textbooks leave much to be desired. A few paragraphs (not chapters), deal very sparingly, in well chosen words, with a subject worthy of much greater detail, a knowledge of which would be of great benefit to physicians and patients. For those interested in a careful, detailed study of the sensory nervous mechanism of the ear and mastoid, Wilson's comprehensive article,[1] "Pain in the Ear and Its Diagnostic Significance," will be of interest. Wilson says that, in the majority of cases, the pain is referred along the third division of the fifth nerve, less often along the second, and rarely along the first; that the most common seat is in the auriculotemporal nerve of the first division, and that, at times, the pain is referred to a posterior area, where no difficulty is found in associating it with the great auricular nerve.

Recently, Sluder[2] has described the painful syndromes associated with disturbance of the sphenopalatine ganglion. He deserves great credit for calling our attention to this syndrome, and, as a result, we have encountered fewer cases of this type in which the diagnosis cannot be made. I have no doubt that the syndrome exists in his classic description. I have observed it in several cases; but my observation has led me to believe it is not necessary that the entire syndrome, as described in the textbook, should be present before the origin of the pain may be diagnosed. Frazier[3] has made a comprehensive classification of facial neuralgia. It is probable that the type of painful syndrome under discussion would be classified in his fourth, or miscellaneous group; or possibly in his fifth group, in which are the cases of psychoneurosis or psychalgia.

The three cases I shall report did not present the complete lower-half headache syndrome, and no direct causal factor for the discomfort was discernible, although careful investigation of the usual causes of reflex pain in the ear was made and each was eliminated.

REPORT OF CASES

Case 1.—Miss M. S., aged 17, was referred to the ear, nose and throat section of the Mayo Clinic in March, 1921, complaining of pain in the right ear and mastoid. The trouble began six years before with severe pain in the right ear, without fever. She was taken to a hospital, where a mastoid operation was performed within two hours of onset. There was no discharge from the ear or mastoid, and the operative wound healed promptly. Pain and tenderness, definitely worse every three or four months, had persisted; during exacerbation, all the symptoms appeared worse at night. Further operation on the mastoid and removal of the appendix had been advised to relieve the condition. The tonsils had been removed.

Examination of the ear, nose and throat was negative. The right tympanic membrane was denser than the left, but the function of both ears was quite normal. The right mastoid tip was tender. Roentgenograms revealed no particular evidence of inflammation. Roentgenograms of the teeth revealed that the third molars were unerupted, but not impacted. The general physical examination and the neurologic examination were negative, but a diagnosis of migraine was made.

The sphenopalatine ganglion region was cocainized, and the patient was immediately relieved. The change in her facial expression was gratifying. Subsequently, on several occasions, phenol (carbolic acid) in liquid petrolatum was used in the epipharynx, and the patient remained free from the discomfort.

Case 2.—Miss L. B., aged 21, came to the Mayo Clinic in February, 1921, complaining of pain in the right ear and mastoid. The trouble had begun in August, 1920. There had been no discharge. Paracentesis had been performed, and the patient had been relieved of the pain for several weeks. This procedure had been repeated. In December, 1920, the pain became so severe that sleep was disturbed. Operation on the mastoid had been contemplated; but, because there had been no fever and no increase in leukocytes, it was delayed. From the patient's friends, it was learned that she had been very precocious in her school work and was regarded as an unusually brilliant student. She had never taken part in the social activities enjoyed by other girls.

The patient did not present the facies of one who suffered severely. The ears, nose, and throat were not unusual; the sphenoid ostium on the right could readily be entered. The right ear and mastoid showed no signs of inflammation, although the mastoid seemed slightly sensitive to touch. The general physical examination was negative except for an adolescent goiter. Roentgenograms of the teeth, and the neurologic and eye examinations were negative. A diagnosis of migraine was made.

The sphenopalatine ganglion region was cocainized and the pain in the ear was definitely relieved for about an hour. The application of silver nitrate and phenol in liquid petrolatum seemed to have little effect. Finally, March 31, 1921, injection of the sphenopalatine ganglion with alcohol relieved the patient. The relief was not immediate, but was complete in a week's time.

The patient returned to the clinic in July, 1921, with a frontal headache; but pain had not returned in the ear and mastoid.

Case 3.—Mrs. C. B. V., aged 42, was examined in the Mayo Clinic in August, 1920, and was found to have gallbladder trouble. Operation was performed and she was relieved of the symptoms. She had had headache since adolescence, especially before the menstrual period. Her one pregnancy had terminated at three months.

Clinical and laboratory investigations proved to be negative, except that roentgenograms of the chest revealed an old intralobar pleurisy. The patient was seen again in December, 1920, and examination revealed no further positive findings.

In April, 1921, the patient was referred to the ear, nose and throat section, complaining of paroxysmal pain behind the right ear, sometimes also in the throat, for which she had been advised (elsewhere) to have a mastoid operation.

Examination revealed apparently negative tonsils, and a low grade granular pharyngitis. The septum of the nose was deflected, with considerable obstruction on the left side. The membrane was undergoing a secondary physiologic atrophy. The right side of the nose appeared normal. The canals of the ears and tympanic membranes were normal, as was function. There was no definite causal factor discovered, although the intranasal and pharyngeal condition may have been contributory.

The right sphenopalatine ganglion region was cocainized, and 10 per cent. silver nitrate was applied. The pain in the ear and mastoid was relieved, and there has been no recurrence. The patient was instructed with regard to the care of the nasopharynx, and this, with the assurance that operative interference was not indicated, may have been a factor in the permanence of the cure.

COMMENT

These patients did not present definite etiologic or causal factors for the sphenopalatine syndrome; all could be grouped definitely as nervous individuals; all were relieved of symptoms by treatment directed to the sphenopalatine ganglion. Operation on the mastoid region previously had not relieved them of their symptoms. I have no explanation for the temporary relief

1. Wilson, J. G.: Pain in the Ear and Its Diagnostic Significance, Quart. Bull. Northwest. Univ. Med. Sch. **11**: 211-221, 1910.
2. Sluder, Greenfield: Concerning Some Headaches and Eye Disorders of Nasal Origin, St. Louis, C. V. Mosby Company, 1918, pp. 272.
3. Frazier, C. H.: Neuralgias of the Trigeminal Tract and Facial Neuralgias of Other Origin: Impressions Derived from a Survey of 555 Cases, Ann. Otol., Rhinol. & Laryngol. **30**: 855-869 (Dec.) 1921.

of the otalgia by paracentesis. It seems that, before operation on the mastoid is advised, all conditions which might cause this referred type of discomfort should be investigated.

ABSTRACT OF DISCUSSION

DR. GREENFIELD SLUDER, St. Louis: During the past year we have made some observations in the clinic at Washington University as to the control of earache through the nasal ganglion or Meckel's ganglion. In a number of observations and experiments we found that a large part of these cases have been controllable with cocain through the nasal ganglion. The exception to that would be any condition in which one has reason to believe that cocain is not absorbed. In the clinic, and in my own practice, we have found that the pain of otitis media, suppurating under pressure, can be controlled by cocainization of the nasal ganglion. We have had some cases in which the landmarks on the drum were more or less obliterated, accompanied by tinnitus, in which the pain was stopped and the tinnitus with it, by anesthetizing the nasal ganglion. Dr. Lillie spoke of separate symptoms, saying that the entire syndrome is not necessary. During the year we have also determined that pain in the lower jaw from the surgical removal of teeth can also be controlled through the nasal ganglion, and there is no anatomic explanation of how that may be. The paper is interesting as to why the diagnosis of migraine should have been made.

DR. NORVAL H. PIERCE, Chicago: We older otologists believe that noninflammatory otalgia is due to disease of the teeth in 85 per cent. of cases, and as I grow older I have no reason for changing that belief. In otalgia, of unknown origin, we should always have a roentgenogram taken for unerupted teeth. Dr. Sluder's work in this direction is most interesting, but the fact that otalgia can be relieved by cocainization of the region of the sphenopalatine ganglion does not establish the cause of the otalgia. It merely blocks the nerve path between the point of irritation and the place to which the pain is referred.

DR. HARRY L. POLLOCK, Chicago: We all have seen cases of impacted molars causing otalgia. Three patients were operated on for mastoiditis before they came to us, and we discovered the impacted molars, the removal of which relieved the symptoms completely. But there are cases in which, as far as we are able to determine, there are no underlying pathologic conditions which may cause these symptoms, in which the pain is just back of the tip of the mastoid. That is always constant in these cases. The typical syndrome includes pain over the eye, back of the ear, in the throat, and sometimes in the arm; but in very few cases do we get all these branches of the ganglion at one time. The characteristic pain, however, is just a few centimeters back of the mastoid. In many of these cases we find a low grade sphenoiditis causing the pain, and if we clear up the sinuses the trouble and the pain will disappear. In many cases the pain comes on postoperatively, and we think it is the result of the scar. But in those cases in which the application of cocain would relieve the symptoms, we are sure to get good results from the injection of the sphenopalatine ganglion. They can be reinjected without danger. In those cases in which this typical pain back of the ear is present and the application of cocain to the foramen does not relieve it, the injection will not do any good.

DR. LOUIS K. GUGGENHEIM, St. Louis: I shall report a case which may relieve Dr. Pierce's doubt and also add a symptom, violent throbbing in the ear. This patient had no teeth. She was 70 years of age, and came to me two weeks after an attack of influenza. At that time she was perfectly well, except for violent pain and throbbing in the left ear. This pain was in the region of the tympanic cavity and also in the mastoid, and there was marked tenderness on pressure. It was difficult to insert a speculum because the canal was so sensitive. I found the drum membrane and canal perfectly normal in appearance; the nose and throat were negative. For the moment I did not think of the sphenopalatine ganglion. I gave the patient a prescription for codein and told her to take a dose every three hours. Her daughter gave it to her every hour, without relief. She came next day, very much depressed because the pain and throbbing had persisted. I then thought of the nasal ganglion and applied 5 per cent. cocain in that region. Shortly after the speculum could be inserted without pain. The patient slept all night without codein, and returned the next morning entirely relieved. As far as I know, she has never had any pain or throbbing since that time.

DR. WILLIAM B. CHAMBERLAIN, Cleveland: I performed mastoid operations in two of these cases before Dr. Sluder's work on the sphenopalatine ganglion appeared; otherwise I should certainly have tried cocainization. In one case, a man, aged 30, the roentgenogram was negative; examination of the mastoid and middle ear was negative. The pain promptly disappeared after the operation, and he has remained free from pain ever since. Needless to say, the mastoid was negative when I opened it. The other case was in a girl, aged 16. I made all the usual tests, and found the mastoid and the middle ear negative. I performed a mastoid operation, opened the mastoid thoroughly, and found it absolutely normal. The interesting thing about this case is that the mastoid never healed, although it was normal, and, of course, absolutely aseptic technic was followed. She ultimately fell into the hands of a surgeon who, fortunately, was a friend of mine. He also tried everything to get this mastoid to heal, and finally made a skin graft. The mastoid, as far as my knowledge goes, has never healed, and the pain is still persisting. I have never had opportunity to try out the cocainization of the sphenopalatine ganglion. Another case, in which the pain was localized 2 inches behind the ear, was found to be due to an impacted tooth. On removal of the tooth, the pain was relieved.

DR. IVOR G. CLARK, Columbus, Ohio: In certain of the cases of mastoidalgia without definite pathology the pain in the mastoid is said to be greatly relieved by mastoidectomy. I recall a paper by Dr. Ayers in which he reported that it relieved several of these patients.

DR. HARRY N. MAYER, St. Louis: There is no discussion as far as I am concerned on the point that these headaches can be controlled by cocainization of the sphenopalatine ganglion. I should like to suggest that in these cases the diet be looked into carefully to find out what these patients are eating—what they are doing that is not normal. It has been my experience that some of these are acidosis cases, and sodium bicarbonate and milk of magnesia has helped me effect a cure in some of these lower half headaches that did not respond to the application of cocain to the ganglion.

DR. JACQUES HOLINGER, Chicago: In several patients suffering from pain in the ear for many weeks we found, after long observations, small pimples on the skin and surroundings of the mastoid, which on careful examination proved to be regular herpes zoster efflorescences. Herpes zoster in that region is not so very rare, and causes the physician much difficulty of diagnosis and the patient persistent and prolonged pain. The membrane and the function are found normal. The pain was not increased on deep pressure on the process. In two cases there was distinct relief after a mastoid operation. These herpes vesicles are easily overlooked. Herpes zoster may occur in other regions pertaining to our specialty in addition to the mastoid. One patient suffered fearfully in the region of the frontal sinus. Intranasal treatments did not help. We recognized the real nature of the disease only after the whole head had been shaved, and the patient prepared for a frontal sinus operation according to Killian. Large confluent herpetic areas were found, sharply limited at the middle line. I had treated the same woman two years previous for an acute frontal sinuitis. The operation took place eight or ten years ago; she had no complaints since. I see her sisters often.

DR. H. I. LILLIE, Rochester, Minn.: In answer to Dr. Sluder's question about the diagnosis of migraine, that was

made from the neurologist's standpoint; it was not our diagnosis. These cases were chosen because none of the usual causes were found in this particular group. That is, we had a large group of otalgias and mastoidalgias in which the contributory factors were easily found; but this was another group. In that respect I may say that we used every differential diagnosis measure we knew of or could learn of, and we took pains to eliminate all the usual, and some of the unusual, causes for this syndrome.

EXPERIENCE WITH CHAULMOOGRA OIL DERIVATIVES IN TREATMENT OF LEPROSY *

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The recent encouraging reports [1] on the treatment of leprosy with the esters of chaulmoogra acid in the Hawaiian Islands induced us to give the leper patients at the San Francisco Hospital the benefits of this remedy. The extensive chemotherapeutic studies of Walker and Sweeney [2] at the Hooper Foundation of the University of California furthered our interest in the subject. Only by their active cooperation has this work been made possible. There have been from twenty to twenty-five patients with leprosy at the San Francisco Hospital for many years. When we began treating these cases, we did not anticipate the publication of our findings. The results, however, have been so at variance with our expectations and the impression obtained from the literature, that we feel some record should be made of them.

EARLY USE OF CHAULMOOGRA OIL

Chaulmoogra oil has long been recognized as the best remedy in the treatment of leprosy. Old Buddhist records in India of ten or more centuries ago refer to the improvement in infected persons after eating the raw chaulmoogra seeds. In modern times, Dyer,[3] Heiser,[4] Hopkins,[5] Connell [6] and Hollman [1] have reported improvement and even cures due to the administration of the whole oil by mouth over a long period of time. Marked gastric disturbances, and the length of time required to obtain results, made this mode of treatment unsatisfactory.

To overcome these disadvantages, the mixture of chaulmoogra oil with other substances to make it suitable for subcutaneous or intramuscular injection was attempted. The formula proposed by Mercado and Heiser,[7] consisting of chaulmoogra oil, 60 c.c.; camphorated oil, 60 c.c., and resorcin, 4 gm., has been used extensively. Heiser [8] reports the cure of twenty-eight patients by the use of this formula. Hopkins,[5] McCoy and Hollman,[9] Armellini,[10] Bercovitz,[11] Coghill,[12] Hall,[13] Cadbury,[14] Connell,[6] Hollman and Dean,[1] and others report cures or improvement in cases after the use of this and other combinations.

In 1916, Sir Leonard Rogers,[15] in India, reported the preparation of soluble salts of fractions of the fatty acids of chaulmoogra oil and their use intramuscularly and intravenously. He made three preparations of the chaulmoogric acids containing fractions of the lower, the medium and the higher melting points. The first preparation he called, arbitrarily, sodium gynocardate; the second, sodium hydnocarpate, as it contained a preponderance of hydnocarpic acid; and the third preparation, sodium chaulmoograte, as it contained more chaulmoogric acid than the other preparations. The latter preparation formed sodium salts too insoluble for use unless combined with other substances. After experimentation, he decided that the sodium hydnocarpate was more active than the sodium gynocardate. It was found [16] that sodium hydnocarpate could be prepared more readily and in larger quantities from hydnocarpus oil than from chaulmoogra oil. Rogers,[17] Cadbury,[14] Carthew,[18] Muir,[19] Peacock,[20] Connell,[6] Neve,[21] and others report the use of sodium gynocardate subcutaneously and intravenously with very good results. Rogers [22] and Muir [23] report even better results with the use of sodium hydnocarpate.

Rogers [24] tested the action of other oils with a large content of unsaturated fatty acids, namely, cod liver oil, linseed oil, Japanese sardine oil, and soya bean oil. He found the cod liver oil preparation, called by him sodium morrhuate, to be most effective. Advanced cases, treated with it, cleared entirely, and some patients who had ceased to improve with other preparations recovered completely when given sodium morrhuate intramuscularly or intravenously. Rogers concluded that the preparation of these different oils may be used to advantage in the treatment of leprosy. If a patient ceased to respond to one oil, the preparation of another oil should be substituted.

Harper [25] of India reports excellent results in the treatment of leprosy by intravenous injections of a mixture of chaulmoogra oil, sulphuric ether and iodin. Muir [26] also reports good results by this method of treatment; but he believes that better results are obtained by the intramuscular or intravenous administration of a formula consisting of ethyl esters of the fatty acids of hydnocarpus wightiana, 1 c.c.; pure creosote, 1 c.c.; camphor, 1 gm., and olive oil, 2.5 c.c.

At the present time, Muir [26] is giving small doses of the ethyl esters of chaulmoogra acids intravenously at frequent intervals, with encouraging results.

The ethyl and other esters of chaulmoogric acids were first prepared by Power and his collaborators in

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1904, during their extended investigation [27] of the chemistry of chaulmoogra oil at the Wellcome Chemical Research Laboratories in London from 1904 to 1907.

Notwithstanding the previous preparation of the esters by Power and the ancient use of chaulmoogra oil in leprosy, Ludwig Taub of Elberfeld, Germany, obtained patent rights in Germany in 1909 for the preparation of esters of chaulmoogra acids and their use in therapeutics. This patent right was assigned to a German chemical company, which put the ethyl esters on the market under the trade name of "antileprol." A little later, patent rights were also obtained in Great Britain and the United States. Following the war, and the confiscation of German patent rights, the alien property custodian sold the rights of this patent in the United States to the Winthrop Chemical Company of New York, which is preparing and distributing the ethyl esters of chaulmoogra acids under the trade name of "chaulmestrol."

In 1919, Hollman and Dean [1] reported the preparation and use by intramuscular injection of the ethyl esters of fractions of the fatty acids of chaulmoogra oil for the treatment of leprosy in Hawaii. These acids were separated into fractions by fractional crystallization, and these fractions converted into their ethyl esters. Four fractions in all were used. Groups of cases were treated with each fraction. It was decided that the therapeutic agent in chaulmoogra oil was distributed through all four fractions. This work was later carried on by McDonald and Dean, and is at present under the supervision of Dr. H. E. Hasseltine of the United States Public Health Service.

In 1919, Hollman and Dean [1] reported the treatment of twenty-six cases for less than two years, eight (30 per cent.) becoming bacteriologically negative in this time. In 1920, McDonald [1] reported the paroling of forty-eight cases; and in 1921,[1] ninety-four more cases were added, making a total of 150 cases.

These patients had been treated with weekly injections of the mixed ethyl esters of the acids of chaulmoogra oil, with 2 per cent. of iodin in chemical combination. This was supplemented by capsules containing the fatty acids of chaulmoogra oil with 2.5 per cent. of iodin chemically combined, given by mouth three times a day. In 1921, McDonald [1] reported series of cases treated without iodin and without chaulmoogra oil capsules. He concludes that "the oral administration is by no means necessary," and "the rôle of the iodin is at most a minor one."

This extended and varied empiric use of chaulmoogra oil and its derivatives in the therapeutics of leprosy was put on a scientific basis by the investigations of Walker and Sweeney,[2] at the Hooper Foundation for Medical Research of the University of California, in 1920. It was demonstrated experimentally that chaulmoogra oil contains substances having a high bactericidal activity in vitro. This bactericidal activity was found to reside in the fatty acids of the chaulmoogric series, and to be a function of the carbon ring structure which is peculiar to the chaulmoogric acids. The bactericidal action of these cyclic fatty acids was shown to be specific against the acid-fast groups of bacteria, and to be inactive toward all other bacteria. Furthermore, it was demonstrated that other unsaturated fatty acids, notwithstanding the therapeutic claims of Rogers and his colleagues, did not possess the specific bactericidal activity of the chaulmoogric acids. From the results of this experimental investigation, it was concluded that the empiric use of chaulmoogra oil and its derivatives in leprosy was justified, and that its therapeutic effect was due to the bactericidal action of the chaulmoogric acids on *Bacillus leprae*.

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TREATMENT OF LEPERS AT THE SAN FRANCISCO HOSPITAL

In August, 1920, we began treatment of the lepers at the San Francisco Hospital, and they were under treatment up to March, 1922, when they were transferred to the national leprosarium at Carville, La.

Of a total of twenty-one cases, there were ten of the nodular type, six of the maculo-anesthetic type, and five of the mixed type. One had shown manifestations of the disease for two months, one for thirteen years, and the others for periods intermediate between these two extremes; the average duration of the disease was four and one-half years. Most of the cases were far advanced. The average period of isolation before beginning treatment was three years.

SUMMARY OF CASES TREATED

Case	Name	Age, Years	Type of Disease	Duration	Severity	Duration Treatment	Average Dose, C.c.	Condition
1.	F. C.	22	Nodular	6 mo.	Moderate	3 mo.	3	Unimproved
2.	W. H.	27	Nodular	5½ yr.	Moderate	3 mo.	3	Unimproved
3.	L. C.	28	Mixed	5½ yr.	Moderate	2 mo.	3	Unimproved
4.	T.	41	Nodular	6 yr.	Advanced	10 mo.	3	Unimproved
5.	A. A.	34	Nodular	1 yr.	Moderate	3 mo.	3	Slight imp.
6.	L. Y.	27	Mac. anes.	3½ yr.	Moderate	5 mo.	3	Unimproved
7.	M.	24	Mixed	3 yr.	Moderate	8 mo.	3.5	Slight imp.
8.	G. H.	33	Nodular	3 yr.	Moderate	8 mo.	3	Unimproved
9.	D.	37	Nodular	10 yr.	Advanced	12 mo.	3	Worse
10.	S.	27	Nodular	5 yr.	Advanced	18 mo.	4	Worse
11.	W. K.	24	Mixed	2 yr.	Moderate	17 mo.	4	Much imp.
12.	Y. S.	45	Nodular	13 yr.	Advanced	9 mo.	3.5	Unimproved
13.	T. L.	36	Mixed	4½ yr.	Moderate	2½ mo.	3	Unimproved
14.	S. A.	53	Nodular	5 yr.	Advanced	13 mo.	3.5	Worse
15.	J. F.	15	Mixed	2 yr.+	Advanced	5 mo.	1	Died during treatment unimp.
16.	E. L. B.	71	Nodular	12 yr.	Moderate	11 mo.	4	Died, pneumonia unimproved
17.	F. W.	19	Mac. anes.	3 yr.	Moderate	14 mo.	3.5	Slight imp.
18.	G.	22	Mac. anes.	2 mo.	Mild	3 mo.	4	Absconded, unimp.
19.	J.	29	Mac. anes.	6 mo.	Mild	2½ mo.	3.5	Absconded, unimp.
20.	E.	47	Mac. anes.	6 mo.	Mild	8 mo.	4	Unimproved
21.	M.	45	Mac. anes.	2 yr.	Moderate	4 mo.	3.5	Much imp.

We employed chiefly the ethyl esters of the total fatty acids of chaulmoogra oil in our treatment. The injections were made intragluteally at weekly intervals, and the dosage was varied according to the weight of the patient and the amount of local and constitutional reaction after the preceding injection. The injections were not supplemented by chaulmoogra oil orally, or by the combination of iodin with the drug.

Laboratory investigations of the chemotherapeutics of chaulmoogra oil and its derivatives, which are being conducted by one of us simultaneously with the treatment of these patients, disclosed that two other esters, the butyl and propyl esters, produced much less local reaction and pain than the ethyl esters or any of a large series of derivatives prepared and tested. Therefore, these two new esters were substituted for the ethyl ester in the later treatment of our patients, and two lepers were treated exclusively with these esters. The clinical results confirmed the relative absence of local reaction obtained in the animal tests, and the

therapeutic action appeared to be as good as that obtained with the ethyl esters.

These twenty-one patients were under treatment for a period of from three to eighteen months, with an average of eight months. Of these patients, a boy, aged 15 years, with advanced leprosy, died of the disease; one man, aged 71, died of pneumonia-leprosy

Fig. 1 (Case 8).—No improvement after eight months' treatment.

unimproved; three patients in advanced stages became definitely worse; nine showed no improvement; two patients with cases of moderate severity were markedly improved; three with cases of moderate severity were slightly improved, and two patients with the disease in an early stage absconded after three months' treatment.

None of these patients became bacteriologically negative during treatment; but the nasal discharge in one case (Case 11) became negative after more than a year of treatment. The accompanying table, case reports and reproductions of photographs illustrate the results obtained.

TREATMENT AT KALIHI AND AT MOLOKAI

In consequence of the slow progress of most of these cases after treatment for fifteen months, it was decided to check up our results by a personal study of the treatment of lepers with the ethyl esters of chaulmoogric acids in the Hawaiian Islands. During December, 1921, one of us had the opportunity to see all the patients at Kalihi Hospital, Honolulu, and practically all the patients at the Molokai Leper Settlement.

There are 176 patients with lepra at Kalihi under the supervision of Dr. H. E. Hasseltine of the United States Public Health Service. These patients present all types of leprosy, from the earliest forms of maculoanesthetic to advanced nodular. On account of all the very early cases of lepra in the Territory of Hawaii being segregated in Kalihi, that hospital is an ideal place for experimentation with the derivatives of chaulmoogra oil.

The various preparations used in treatment are made at the University of Hawaii under the supervision of Dr. A. L. Dean. At present, both at Kalihi and at Molokai, the preparations are used without the addition of iodin. The injections are given once a week, and until recently all injections were given into the buttock. Since the early part of January, 1922, Dr. Hasseltine has been giving a few patients small doses of the ethyl esters intravenously every few days. The latter method has the advantage of being painless.

Between 1918 and July, 1921, 150 patients were paroled from Kalihi; of this number, ten at least have died; a few have gone to other parts of the islands, and twenty (8 per cent.) have returned to Kalihi for further treatment as the result of recurrence of active symptoms of leprosy. It is likely that more of the paroled patients will show activity of the disease and will need further treatment.

The present system of paroling patients and giving them weekly injections of the ethyl esters for a further period of two years is a good one. It allows the patients to work, and with the continued medication there will be fewer recurrences, and many more patients are likely to be permanently cured.

During the six months previous to January, 1922, there were but six patients paroled. This small number of paroles indicates that the present authorities are using greater caution to prevent the discharge of arrested cases which are later liable to show exacerbations of leprosy. There are many patients with an advanced stage of leprosy at Kalihi, probably fifty of whom are incurable with our present method of treatment, and many of these should be sent to Molokai.

The settlement of Molokai contains 452 patients, and during 1921 more than 300 received treatment with the ethyl esters. As no patients with leprosy have been sent to Molokai since 1919, it is quite evident that very few early cases are to be seen there, and of the 300 receiving treatment, few, if any, show indications of an early parole. Dr. William Goodhue, the physician in charge of Molokai Settlement, is conscientious in giving the injections, and hopes to see many of the milder cases cured.

Fig. 2 (Case 9).—Lesions more extensive after twelve months' treatment.

From conversation with Dr. Heiser, Dr. Trotter and many others who have had extensive experience in the treatment of leprosy, it seems to be the unanimous opinion that the present treatment with the esters is by far the best of any chaulmoogra oil treatments so far advanced. From bacteriologic studies and from clinical symptoms, it seems probable that the present system of treatment will cure the early cases, especially in young subjects. The advanced cases certainly improve in time, and it is possible that many of these will be cured after years of treatment. Some of the advanced cases show little or no improvement after many months of treatment, and a very small percentage seem to do poorly under treatment.

In our cases of leprosy treated in San Francisco, the discouraging results are undoubtedly due to the age

of many of the patients and the advanced stage of leprosy in most of them. In the few early cases we have treated, we are satisfied that the present remedy is of great value, and from statistics gathered we are also of the opinion that the injections must be kept up for at least three years in the milder cases and much longer in the advanced ones.

Fig. 3 (Case 10).—Appearance of patient before treatment.

Fig. 4 (Case 10).—After eighteen months' treatment: lesions somewhat larger.

Isolation of all advanced cases of leprosy in one leprosarium in Louisiana is an excellent plan. Under government control and supervision these patients will receive much better treatment than when they were scattered in isolated county hospitals throughout the United States. We shall watch with much interest the results of treatment in this national leprosarium, and particularly the effect of further treatment in our individual cases.

REPORT OF CASES

CASE 1.—F. C., a man, aged 22, born in China, who had leprosy of the nodular type, of six months' duration, was treated three months with an average dosage of 3 c.c. There were large nodules on the brow, and many small nodules on the cheeks, neck, chin and ears. There was marked tumefaction of the lobes of the ears. The trunk was normal except for a few pigmented macular areas on the back. There were a few similar areas on the forearms and arms, and many miliary semiconfluent nodular areas around the wrists. Tumefaction and pigmentation of the hands were well marked. There was no muscle atrophy. Compulsory treatment was discontinued after three months. The leprosy was unimproved.

CASE 2.—W. H., a man, aged 27, born in Canton, China, had leprosy of the nodular type, of five and one-half years' duration. Treatment was given for three months with an average dosage of 3 c.c. There were alopecia and tumefaction of the brows; semiconfluent and confluent nodules on the nose, cheeks, chin and ears; diffuse, ill-defined, macular mottling over the shoulders, arms and forearms, and tumefaction of the backs of the hands. There was no muscle atrophy or sensory changes. Compulsory treatment was discontinued after three months. The leprosy was unimproved.

CASE 3.—L. C., a man, aged 28, born in China, had leprosy of the mixed type of five and one-half years' duration. The symptoms began six months before entrance. The patient was under treatment for a period of two months, with an average dosage of 3 c.c. There was diffuse but not marked thickening of the forehead, brows, nose and cheeks. The ears were enlarged, especially in the lobes. There was a geographic macular eruption on the neck; a coin-sized, well defined macular eruption on the trunk, anterior and posterior; diffuse macular areas on the arms and forearms; multiple, miliary nodules on the wrists, and tumefaction of the hands; a diffuse, leprous thickening of the right palm. The ulnar nerves were moderately enlarged; there was thenar and hypothenar atrophy, especially of the right hand. There were confluent nodules over the right elbow tip simulating xanthoma. There were geographic areas on each thigh, and nodules on the right buttocks. The patient took treatment under compulsion, and discontinued it after two months. No improvement was noted.

CASE 4.—T., a man, aged 41, born in Greece, had leprosy of the nodular type, of five years' duration. The patient was under treatment for a period of ten months. The average dosage was 3 c.c. each week. There was worm eaten alopecia of the scalp of six years' duration, simulating syphilis. The eyes were normal; the trunk, thighs and arms clear; the cheeks shiny and red, with many telangiectases and comedones. Small nodules and stains were scattered over the face. The brows and lashes were gone. The ears were enlarged and wrinkled. The hands and forearms were nodular. There was passive congestion in the hands; the normal lines of the palms were accentuated. On the legs, around the knees, were deep, dark scars. There were ulcers on each calf. There were nodules and hyperkeratosis of the soles. The condition in March, 1922, was more advanced.

CASE 5.—A. A., a man, aged 34, born in India, had leprosy of the nodular type, of one year's duration. Treatment was given for three months. The average dosage was 3 c.c. There was alopecia of the brows. There was thickening with scattered small nodules over the face, cheeks and chin. The nose was broadened and flattened. The trunk was practically clear. There was marked tumefaction of the hands and feet, and considerable ulceration and secondary infection on the feet. In March, 1922, all the areas were slightly improved. The patient's general health was improved.

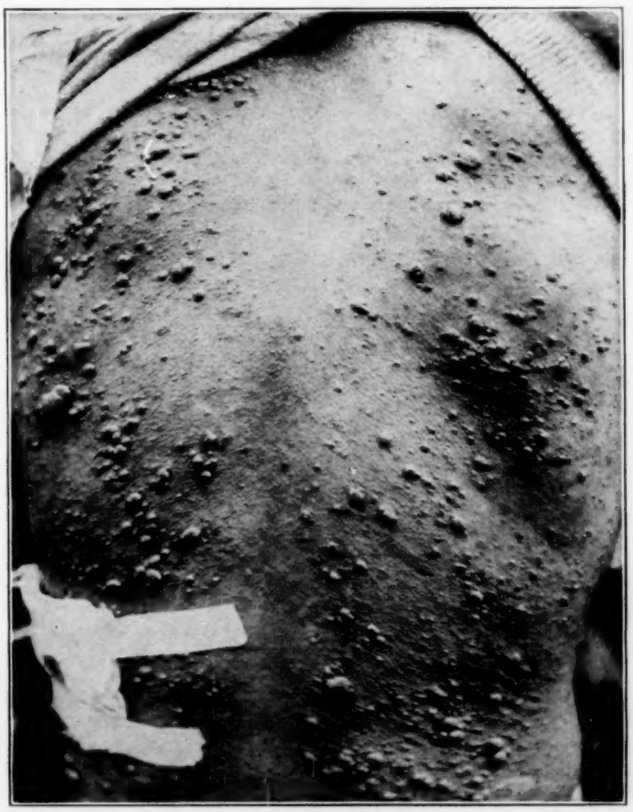

Fig. 5 (Case 10).—Back of patient before treatment.

CASE 6.—L. Y., a man, aged 27, a Chinese, had leprosy of the maculo-anesthetic type, of three and one-half years' duration

The patient was under treatment for a period of five months. The average dosage was 3 c.c. The brows, nose and ears were normal. There were confluent and diffuse macules on the face and neck. A few chicken-egg sized anesthetic rings were noted on the chest. The hands were distinctly claw-shaped, and all the muscles were atrophied. The arms and thighs were covered with diffuse, anesthetic, geographic areas. Compulsory treatment was discontinued after five months, with the leprosy unimproved.

Case 7.—M., a man, aged 24, born in Hawaii, with leprosy of the mixed type, of three years' duration, was given treatment eight months. The average dosage was 3.5 c.c. There were about a dozen discrete and comparatively flat nodules on the forehead, cheeks and chin, confluent on the right cheek. There was faint tumefaction of the ears. There was a diffuse, confluent and semiconfluent macular eruption on the trunk and thighs. Tumefaction was noted on the backs of both hands. A few small nodules were located on the wrists and forearms. There was no disturbed sensation or muscular atrophy. Compulsory treatment was discontinued after eight months. The nodules on the face were smaller. The macular areas on the body were less distinct.

Case 8.—G. H., a man, aged 33, a Japanese, with leprosy of the nodular type, of three years' duration, received treatment for eight months. The average dosage was 3 c.c. There were about two dozen small, flat nodules on the cheeks, lips and chin. The ears were large, nodular and pendulous. There was a faint, miliary, papular rash over the trunk and thighs. There was tumefaction over the back of the hands. The palms were dry, the normal lines increased. After eight months' treatment, the patient complained of general malaise and severe pains all over the body a few hours after each injection. The injections were discontinued. The leprosy was unimproved.

Case 9.—D., a man, aged 37, an American, with leprosy of the nodular type, of ten years' duration, was given treatment for twelve months. The average dosage was 3 c.c. There were discrete and confluent nodules over the entire face. The nose and ears were ulcerated. There was total alopecia of the brows. The patient was blind in both eyes. There was a diffuse, lichenoid, leprous dermatitis from the scapulae to the buttocks. A similar condition existed on the buttocks, with scattered nodules throughout. There were crenated skin and lichenoid dermatitis on the thighs. A diffuse and marked tumefaction was present on the backs of the hands and fingers. In March, 1922, the condition of the lesions was more advanced.

Fig. 6 (Case 10).—After eighteen months' treatment: individual lesions smaller, but much more numerous.

Case 10.—S., a man, aged 27, a Portuguese, with leprosy of the nodular type, of five years' duration, was treated eighteen months. The average dosage was 4 c.c. Nodules from the size of a pea to that of a pigeon's egg covered the face. Some lesions were almost pendulous. A few ill-defined nodules were on the tongue and hard palate. There were semipendulous and semiconfluent nodules over the hands and forearms, small nodules over the palms, and scattered pea to lima bean sized semipendulous nodules over the trunk. There was no muscle atrophy. In March, 1922, the lesions were somewhat larger and more extensive.

Fig. 7 (Case 11).—Before treatment.

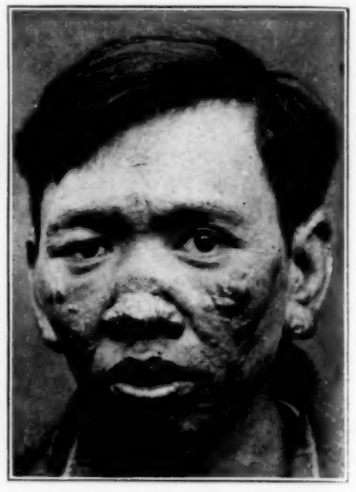

Fig. 8 (Case 11).—After seventeen months' treatment: most of nodules remaining are fibrous.

Case 11.—W. K., a man, aged 24, with leprosy of the mixed type, of two years' duration, was treated seventeen months. The average dosage was 4 c.c. Pea-sized nodules were scattered over the forehead, cheeks, nose and ears. Some areas were soft, and some fibrous. A few small nodules were scattered on the forearms. There were geographic, cyanotic macules on the trunk, a chronic lichenoid leprid of the thighs, and solid edema of the backs of the hands. The ulnar nerves were enlarged. There was contracture of the little and ring fingers. The nasal secretions contained many lepra bacilli. These disappeared after one year's treatment. In March, 1922, many nodules had disappeared, leaving pigmentation. The remaining nodules were fibrous and apparently inactive.

Case 12.—Y. S., a man, aged 45 years, a Chinese, with leprosy of the nodular type, of thirteen years' duration, was treated nine months. The average dosage was 3.5 c.c. There were confluent, pea-sized, subcutaneous nodules over the entire face. The nose was flattened and partially destroyed. There were ulcerations on the nose, lips and cheeks. There was almost complete alopecia of the brows. The skin of the trunk was dry and scaly, with hyperpigmentation over the lower back. There was edema of the backs of the hands and the feet. Compulsory treatment was discontinued after nine months. The leprosy was unimproved.

Case 13.—T. L., a man, aged 36, a Chinese, with leprosy of the mixed type, of four and one-half years' duration, was treated two and one-half months. The average dosage was 3 c.c. A few faint, indistinct nodules were seen on the upper lids. There was considerable atrophy of the skin of the face, apparently the result of the absorption of leprous lesions. Small cutaneous and subcutaneous nodules were grouped on both forearms. There were pigmentation and crenated skin on the backs of the hands, and contracture and atrophy of all the fingers on the right hand, associated with marked anesthesia. There was very little contracture or atrophy of the left hand. The condition, after two and one-half months of compulsory treatment, was unimproved.

Case 14.—S. A., a man, aged 53, an American, who had contracted the nodular type of the disease in the Philippines, five years before, was given treatment thirteen months. The

average dosage was 3.5 c.c. The forehead was wrinkled and hypertrophied. There were about two dozen small nodules on the cheeks, chin and lips. The left eye had been removed two and one-half years before because of corneal involvement. The entire right eye was blurred; the pupil was irregular from synechiae. The entire body had a faint, wrinkled, pigmented, scaly appearance. The condition of the hands was similar, but more advanced. Very little, if any, atrophy was present. In March, 1922, the patient was totally blind. The nodules on the face were larger. The general health of the patient was very poor.

CASE 15.—J. F., a boy, aged 15 years, a German, born in Honolulu, with leprosy of the mixed type, of probably two years' duration, was treated five months. The average dosage was 1 c.c. The patient weighed 50 pounds (22.7 kg.). There was total alopecia of the brows. The nose, ears, lips, cheeks and chin had been partially destroyed by ulcerating nodules. There were dry, faint, mottled and macular areas over the trunk and the extremities. There were tumefaction of the backs of the hands and contracture of the little fingers on both hands. The patient's general condition was much improved after two months' treatment; it became gradually worse, however, and he died of the disease after five months' treatment.

CASE 16.—E. L. B., a man, aged 71 years, an American with leprosy of the nodular type, of twelve years' duration, was treated eleven months. The average dosage was 4 c.c. The patient was blind in both eyes. The skin on the face was atrophic from absorption of nodules. There was a diffuse, leprous, lichenoid dermatitis over the back, abdomen and the sides of the body; a faint, diffuse, gyrate mottling over the chest and the thighs and crenated skin on the forearms. The backs of the hands were dry, wrinkled, crenated and bluish. There was no muscle atrophy. The patient died of pneumonia after eleven months of treatment, with the leprosy unimproved.

CASE 17.—F. W., a man, aged 19, a Chinese, with leprosy of the maculo-anesthetic type, of three years' duration, was treated fourteen months. The average dosage was 3.5 c.c. There was elephantiasis of the upper and the lower lip. On the face, neck and upper part of the back there were faint, ill-defined, macular areas. The toes and fingers were markedly contracted with considerable atrophy. Both ulnar nerves were definitely enlarged and nodular. The hands and areas on the forearms were anesthetic. In March, 1922, the macular areas were disappearing; otherwise the condition was unchanged.

Fig. 9 (Case 12).—No improvement after nine months' treatment.

CASE 18.—G., a man, aged 22, born in the Philippines, with leprosy of the nerve type, of two months' duration, was treated for three months. The average dosage was 4 c.c. each week. The right ulnar nerve was about the size of a little finger. The right little finger was contracted. The side of the wrist and palm innervated by the ulnar nerve showed a brownish pigmentation with accentuation of the normal lines. This entire area was anesthetic. The patient absconded after three months' treatment with the leprosy unimproved.

CASE 19.—J., a man, aged 29, born in the Philippines, with leprosy of the nerve type, of six months' duration, was treated two and one-half months. The average dosage was 3.5 c.c. each week. Hyperpigmented and depigmented areas were scattered over the body. Half a dozen dollar sized rings were scattered over the buttocks and the back. There was slight tumefaction of the backs of the hands, with an accentuation of the normal markings on the palms. A similar condition prevailed on the soles. There were small ulcers on the great toes. The patient absconded after three and one-half months' treatment, with the leprosy unimproved.

Fig. 10 (Case 15).—Boy, aged 15, died of disease after five months' treatment.

CASE 20.—E., a man, aged 47, an American, with leprosy of the maculo-anesthetic type, had spent some time in Brazil sixteen years before. The duration of the symptoms was six months; the duration of treatment, eight months. The average dosage was 4 c.c. A palm-sized fawn-colored, anesthetic macular area was situated just above the left internal malleolus. After seven months' treatment, erythematous macular anesthetic areas appeared on the upper lip and the right cheek. A few months after beginning treatment, the area on the leg was barely visible; at present, however, it is about the same as at the time when the patient was first seen. After eight months of treatment, he complained of general malaise with pains in the muscles and joints that were so severe that they prevented him from working. Treatment was discontinued for two months.

CASE 21.—M., a man, aged 45, an Englishman, probably contracted the disease in South Africa. The duration of symptoms was two years. The disease was of the maculo-anesthetic type. He was under treatment for a period of four months. The average dosage was 3.5 c.c. Erythematous, macular areas were situated on the left chin, left temple and left ear. The left posterior lumbar region was covered with an extensive, erythematous, macular eruption. There was a small macular area on the right anterior wrist. The macular areas were all anesthetic to pin pricks, heat and cold. After one month's treatment, the areas on the back and wrist became pigmented, and sensation began to return. At present, after four months' treatment, the pigmented areas are fading, and the skin is returning to its normal state. The areas on the face are involuting more slowly. There is general malaise, with pains in the joints and muscles of such severity that the patient is confined to bed for three or four days after each injection. Treatments were discontinued for three or four weeks. The patient was given sodium cacodylate injections during this rest period.

135 Stockton Street.

ABSTRACT OF DISCUSSION

DR. WILLIAM T. CORLETT, Cleveland: The paper is fair and comprehensive. Its conclusions, however, may be a little too optimistic; but optimism, next to the actual curative agent, is the stimulus that the leper needs. Since the parole system was adopted in the Hawaiian Islands in 1918 or 1919, the leper himself has received a new lease of life. That the community is more endangered is another question. He has felt that it is possible for him to become rid of the malady, which is a valuable curative asset in any disease. As to the treatment of leprosy with the ethyl esters: So far as I can ascertain, they bring out no beneficial properties not possessed by the old chaulmoogra oil itself—when the patient can take chaulmoogra oil. But the crude oil is often irritating to the stomach, and many patients cannot take it. In such instances the intramuscular, or better, the intravenous, administration of the ethyl esters is a decided advantage. The separation of the ethyl esters made available in 1904, or soon after, must be, therefore, considered a step in advance. A few weeks ago when I left Honolulu, Dr. Hasseltine, the marine and public health officer, was giving, when possible, the ethyl esters intravenously, and this to my mind will prove to be the future treatment for leprosy. The use of the ethyl esters intramuscularly, into the buttocks, is painful, much more so than the same method of giving mercury. Even when patients are willing to submit to it, there are disadvantages. I recall two cases in which extensive abscesses followed this procedure, while the introduction into the veins is painless. If the ethyl esters can be rendered sufficiently innocuous to be introduced safely into the veins, it would be the best treatment of leprosy so far as relates to the ethyl esters or the newer derivatives of chaulmoogra oil.

DR. R. M. WILSON, Korea: I have 800 patients with leprosy under my care. I have trained our lepers to do their medical work and use the microscope, as well as other laboratory work, and I am enthusiastic about chaulmoogra oil. I believe that chaulmoogra oil is as good as the ethyl esters because it contains many things the ethyl esters do not. We have been using chaulmoogra oil, 1 per cent., and for six months we have been using the ethyl esters, but the ethyl esters have not affected the old cases treated by chaulmoogra oil. Either the ethyl esters or chaulmoogra oil in a new case will show quite marked results in six months' time. I think that in the cases shown this morning we could hardly hope to see much improvement, because the cases are so advanced. The great hope is in the younger cases, particularly the children, who respond more readily. We find in some cases that improvement takes place under hypodermic injections before the internal treatment is effective. In our institution we have the industrial work pretty well established; these patients do brick and tile work, and they prefer to take the capsules internally and that seems to hold them in check. Many cases are not entirely healed, but they are held in check. I have 300 patients on the ethyl esters in Peking and 200 on chaulmoogra oil, and hope to report in a year's time which gives the best results. These lepers come in literally crawling in the dust, feeling that they are dead dogs, and then when they come to realize that we can do something for them they are the happiest group you can find. I am very enthusiastic about the ethyl esters, and believe there is no doubt that we can get splendid results in the early cases.

DR. I. L. MCGLASSON, San Antonio, Texas: In San Antonio we have about thirty cases of leprosy, not that number under treatment, but that is about the number we have proved. This paper is a wonderful article on the class they have attempted to treat, but I believe that the problem in leprosy is the same as in tuberculosis and cancer—there are cases we cannot touch. I think that it is unfair to draw conclusions from the old and hopeless cases. It is the early case in which we can do the most good. I am going to advance another opinion, and that is that many cases are not recognized. They occur not in the poorer class but in the better classes, and yet they are lepers. The class in which we get the best results, in my experience, consists of early cases, when the patients are in fine shape physically and mentally. I think the point is well taken by Dr. Corlett as to the time when they will return. A certain percentage will recur, which indicates that we have stopped treatment early. We have no means of knowing when they can be discharged as cured and when they can stop treatment. Whether this is the best treatment or not, we are on the right track to get a treatment which can offer something if we get the cases in time. My experience is that in the + and ++ Wassermann reactions that cannot be substantiated clinically, if one will investigate the nose and the skin, one will probably find some evidence of leprosy. Let us keep an open mind on this. The cases in California were far advanced, and it would take a long time before they could be influenced by the ethyl esters or chaulmoogra oil; but in the early cases I am sure that a great deal can be accomplished, and many patients cured.

DR. ERNEST D. CHIPMAN, San Francisco: The cases reported were old, but I know from personal conversation with Dr. Morrow that they have taken the cases as they found them, and that they thoroughly believe in the efficacy of the treatment in early cases. Dr. Corlett, and I think Dr. Wilson also, expressed the view that a very important feature in leprosy is the moral effect produced by the introduction of a treatment that gives the patients some hope. I have had an opportunity of visiting the hospitals in Honolulu twice during the last few years, and have been much impressed with the apparent happiness with which patients faced their hospitalization. Whereas in former times they made every effort to conceal the disease, they now come voluntarily for treatment.

DR. FLOYD STEWART, St. Louis: I had the pleasure of treating many of these patients with Dr. Isadore Dyer of New Orleans. Dr. Dyer first began using potassium chlorate, sodium salicylate and strychnin. He reported a case as a probable cure because all the lesions cleared up. The patient was dismissed from the Charity Hospital outclinic, and was not taken to the leper colony. At that time it was purely voluntary; there were no laws to transport these people, and this patient, a negro, returned to work; but in about eighteen months he came back for further treatment. At that time Dr. Dyer took up another treatment, called the "antivenin" treatment. He purchased this serum from the Calmette Laboratory at Lille, France, and it gave remarkably good results at first. Following this case we had several that showed improvement for a certain length of time, and then retrogressed. Dr. Dyer discussed the use of the antivenin serum, not on account of the cost, which he had defrayed himself, but because of the poor final results. Then he took up this new treatment with chaulmoogra oil. He was rather enthusiastic about the results he was obtaining. I hope that Dr. Morrow's results are encouraging enough for him to persist in treating these cases, and that he will succeed in curing the mild cases at least, for it is quite evident that when physicians and patients are enthusiastic about a remedy, better results will be obtained.

DR. EDWARD A. OLIVER, Chicago: We have had about seven of these cases under treatment in the Cook County Hospital and have been very enthusiastic about the ethyl esters. Six were of the nodular type and one of the maculo-anesthetic type. We first started on chaulmoogra oil, and then when we received the ethyl esters we used them. There was no patient who did not improve, but they were only moderately advanced cases. One patient was a Serbian, and he improved very rapidly, all of the lesions disappearing. One man we have paroled now. Every one of these patients improved mentally, physically and in every other way under the ethyl ester treatment.

DR. HIRAM E. MILLER, San Francisco: In presenting this paper we had only hoped to moderate the impression that advanced cases of leprosy were being readily cured by the injection of ethyl esters over a comparatively short length of time. However, I would like to emphasize the fact that we feel that early cases in young persons may be cured with the present methods of treatment.

PHARYNGEAL INSUFFLATION ANESTHESIA *

ALBERT H. MILLER, M.D.

PROVIDENCE, R. I.

In any system of ether administration by inhalation, a percentage of ether vapor is added to the tidal respiratory air and is carried to the pulmonary alveoli during inspiration. On expiration, a part of the ether vapor is expired and wasted, the proportion of waste depending on the point in the respiratory tract to which the ether vapor has been delivered. The points of delivery of the ether vapor in inhalation anesthesia, arranged in order of their efficiency are: the bifurcation of the trachea, as in tracheal insufflation; the oropharynx, as in pharyngeal insufflation, and the nasal and oral orifices, as in the usual methods of anesthesia.

ADVANTAGES OF PHARYNGEAL INSUFFLATION ANESTHESIA

When compared with the delivery of ether vapor to other points in the respiratory tract, pharyngeal insufflation has manifest advantages. The introduction of the pharyngeal tube is a simple matter, takes little time and does not require a deep initial anesthesia. After the introduction of the tube, the surgeon has a clear field for operations on the face, head, neck, chest and upper air passages. No inhaler nor mask covers the mouth and nose. The operation is not hindered by proximity of the anesthetist or of his appliances. The constant flow of air into the pharynx provides for the requirements of respiration, and permits covering the face with sheets and towels without interfering with the respiration.

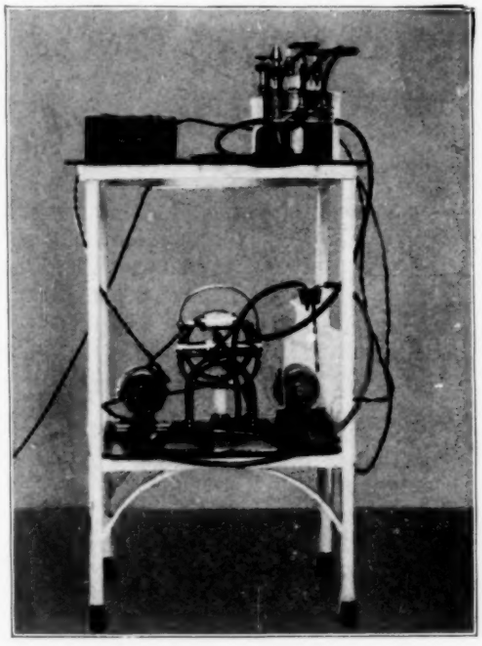

Fig. 1.—Apparatus for pharyngeal insufflation anesthesia. Above, rheostat for controlling speed of motor; constant temperature ether vaporizer. Below, motor and air pump; bottle connected with suction apparatus.

APPARATUS

The essentials for satisfactory pharyngeal insufflation are: an apparatus for delivering a current of air, capable of regulation up to 10 liters per minute; a vaporizer which will mix with the air current a constant percentage of ether vapor and which can be perfectly controlled as to the ether vapor percentage delivered, and nasal and oral tubes for delivering the ether vapor air mixture to the orophraynx.

Means for providing the current of air for pharyngeal insufflation are: an air pump actuated by an electric motor, the speed of which is controlled by a delicate rheostat; or a tank of compressed air controlled by a reducing valve; or a foot pump. If no means for controlling the speed of the electric air pump is provided, the foot pump should be chosen, as the rate of flow of the air can be roughly controlled by the speed at which the foot pump is worked. The object of this apparatus is to keep the air in motion and not to produce positive pressure.

The mixture of ether vapor and air is formed by injecting liquid ether regularly, in small amounts, into the air current; by atomizing or aspirating liquid ether into the air current, or by passing the air current over the surface of liquid ether in a container. In the last of these methods, which is the one most commonly used, the rate of vaporization depends on the temperature of the liquid ether in the container. As evaporation goes on, the liquid ether constantly becomes colder, with resulting diminution in the rate of vaporization and in the anesthetic dosage. If the ether container is placed in a warm water bath of uncertain temperature, the result is uncertain, and may be either an overdose or an underdose of the anesthetic.

The constant temperature ether vaporizer is designed to overcome the uncertainty as to ether dosage resulting from variations in temperature. By means of an electric heater and thermostat, the liquid ether is kept at a constant temperature of 32 C. (90 F.). With a constant current of air passing across the surface of the ether, the percentage of ether vapor with air will also be constant. An arrangement of valves attached to the vaporizer allows the entire current of air, or any fraction of the entire amount, to pass over the liquid ether, the remainder flowing directly through a by-pass. By varying the percentage of the air current which is allowed to pass through the ether chamber, any strength of ether vapor in air, from zero to the capacity of the apparatus, may be obtained, and will be delivered constantly as long as the air current is maintained, the position of the valves is unaltered and ether remains in the container.

The diameter of the ether container is 3 inches (7.5 cm.), and the evaporating surface measures 45.6 square centimeters.

With the thermostat set for 32 C. (90 F.), and the electric air pump delivering 5.13 liters of air per minute, the ether vapor strength is 60 per cent. by weight and 29 per cent. by volume, or 220 millimeters ether vapor tension. The method of computation follows:

Period, ten minutes.

Volume of air, 51.3 liters, by direct measurement.

One liter of air at room temperature, 20 C. (68 F.) weighs 1.205 gm. Weight of air, $51.3 \times 1.205 = 62.8165$ gm.

Weight of ether vaporized, 38.27115 gm., by subtraction from total amount.

Percentage of ether to air by weight, $38.27115 \div 62.8165 = 60$.

Formula for reducing percentage by weight to percentage by volume: $X = \frac{32\,P}{32 + 83(1.00 - P)}$, when X is the percentage by volume expressed as a decimal, and P is the percentage by weight expressed as a decimal.

Substituting 0.60 for P in this equation:

$$X = \frac{32 \times 0.60}{32 + 83(1.00 - 0.60)} = 0.29.$$

Twenty-nine per cent. of 760 = 220, the ether vapor tension in millimeters of mercury.

* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

The nasal tube is curved to fit the cheek, with the tip bent to enter the nasal orifice. To the tip is attached a rubber tube about 5 inches (12.5 cm.) long and one-quarter inch (6 mm.) in diameter. The oral tube is bent to fit the cheek, with the tip bent to enter the mouth, and has a similar rubber tube attached. Since a single tube is sufficient, there is no advantage in the use of double tubes. The rubber tip of either the nasal or oral tube reaches to a point in the oropharynx opposite the tonsils.

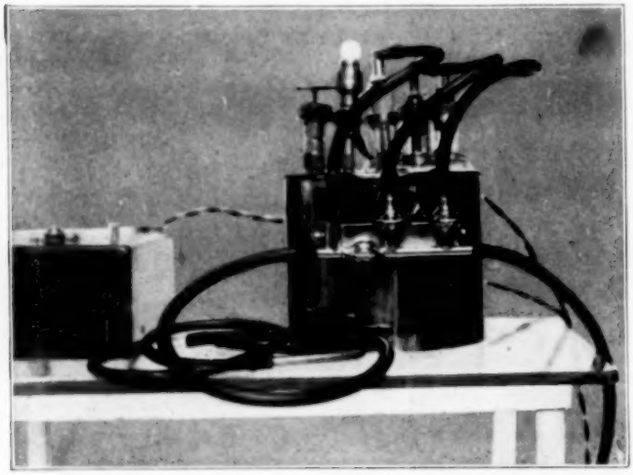

Fig. 2.—Constant temperature ether vaporizer: water-bath kept at a constant temperature by an electric heater and thermostat; Woulfe bottle partly filled with ether; valves mounted on water bath; inlet to right, outlet to left. When all valves are in horizontal position as shown, the air current passes through the by-pass and carries no ether vapor. This starting position cannot readily be mistaken.

TECHNIC OF ADMINISTRATION

Before the anesthesia is begun, the pump is started and set to deliver a current of air of from 6 to 10 liters per minute. If the amount of air delivered is not sufficient to provide for the entire respiratory need, a more concentrated ether vapor will be required to compensate for the dilution of the mixture. Until the introduction of the nasal or oral tube, the entire air current passes through the by-pass and carries no ether vapor. The initial anesthesia is secured in the customary manner and need be only deep enough to permit the introduction of the tube without resistance from the patient. The tube is lubricated and is slipped gently into the nostril or into the mouth over the tongue. The tube may be held in place by a strip of adhesive plaster across the cheek. Whether the nasal or oral tube shall be chosen depends on the nature of the operation to be performed. For operations on the nose or nasal passages, the oral tube is chosen. In most other cases, the nasal tube is used, as it does not readily become dislodged. For the tonsil and adenoid operation, the nasal tube is introduced, and it is removed when the adenoid operation is to be commenced.

After the tube has been introduced, a steadily increasing percentage of the air current is made to pass through the ether chamber until the entire current is passing over the ether. The depth of anesthesia is controlled by regulating, with the valves, the percentage of the air current which is allowed to pass through the ether chamber and not through the by-pass. After studying the patient's reaction to the anesthetic for a few minutes, the anesthetist may move away from the patient. He can judge the depth of anesthesia by the character of the respiration, the state of muscular relaxation, the movements of the extremities, especially of the fingers and toes, and the respiratory reaction on suddenly slightly increasing the ether vapor percentage. As the anesthetist may not be able to control the jaw without interfering with the operation, an artificial air way is introduced, if indicated.

In draping the patient for the operation, interference with the respiration from sheets or towels may be neglected, as the constant current of air entering the pharynx is sufficient for the respiratory need. The operation proceeds without interference due to proximity of the anesthetist or his appliances to the operative field. The principal care of the anesthetist, aside from maintaining the proper depth of anesthesia, is to see that respiration is not mechanically interfered with by the surgeon or assistant.

OBJECTIONS TO PHARYNGEAL INSUFFLATION ANESTHESIA

Theoretical objections which are raised to this form of anesthesia are based on an increased pressure in the pharynx, and the danger of postoperative pulmonary complications due to this increased pressure. The first of these objections can be readily answered by connecting a manometer in series with the tube which joins the vaporizer to the nasal or oral tube. While the apparatus is in use, the manometer registers no pressure whatever except when a lightly anesthetized patient attempts to swallow, when a pressure of 10 or 12 millimeters is momentarily indicated. One having a knowledge of the structure of the pharynx would be able to foretell this result. As the pharynx has five principal openings, it would not be sensible to suppose that an air current entering one of these openings could increase the intrapharyngeal pressure while the four other orifices remained open.

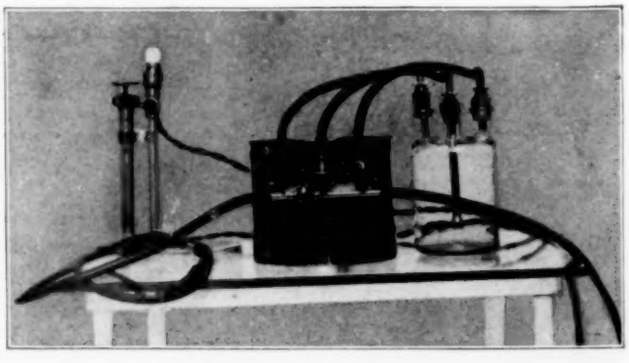

Fig. 3.—Constant temperature ether vaporizer; from left to right: electric heater and thermostat; water-bath; Woulfe bottle; inlet to right, outlet to left; tube in center opening dips into ether. When first and third valves mounted on water-bath are in the vertical position, all of the air current passes through the ether container. When the valve to the left is in the horizontal position and the one on the right is vertical, as shown, less than half of the air current passes through the container. As the left valve is turned from this position to vertical, the percentage of ether vapor is increased. With the left and central valves vertical and the right horizontal, the air current bubbles through the liquid ether and the ether percentage is considerably increased.

To determine the effect of pharyngeal insufflation in producing postoperative pulmonary complications, it is necessary to compare the results in this form of anesthesia with the results of other methods. For this purpose, I have tabulated 1,000 recent consecutive personal cases. These 1,000 operations were followed by twelve pulmonary complications, one case of pulmonary

embolism resulting fatally. The percentage of pulmonary complications is 1.2 and the mortality from these complications is 0.1 per cent. Pharyngeal insufflation was used in 188 of these 1,000 cases, with two postoperative pulmonary complications. Both of these patients developed a cough without fever, and both recovered. The percentage of pulmonary complications in these 188 cases was 1.06, with no mortality. This experience is corroborated by the records of institutions which have used pharyngeal insufflation extensively, without any increase in the proportion of pulmonary complications. It is probable that, so far as the anesthetic has any effect in the production of pulmonary complications, these unfortunate results depend on the depth of anesthesia rather than on the method employed, and that, following a light degree of anesthesia, these complications rarely occur.

CASES SUITABLE FOR PHARYNGEAL INSUFFLATION

In the 1,000 cases tabulated, pharyngeal insufflation was employed 188 times, or in 27 per cent. The accompanying table indicates the nature of the operations and the results.

NATURE OF OPERATIONS AND RESULTS

Operation	Number of Cases	Results *
Tonsil and adenoid	112	
Goiter	16	Two died of hyperthyroidism, one in ten hours, one in three days; one developed cough without fever
Nasal septum	11	One developed cough without fever
Breast	9	
Mastoid	8	Two died from meningitis, one in six days, one in thirty-three days
Sinus	4	
Brain	4	
Maxilla	4	
Cervical glands	4	
Kidney	4	
Esophageal diverticulum	2	
Laryngeal tumor	1	
Spinal cord	1	
Tongue	1	
Nose	1	
Ear	1	
Eye	1	
Other operations	4	
Total	188	

* Satisfactory except as noted.

CONCLUSIONS

Pharyngeal insufflation anesthesia is chosen for all of the operations in which the ordinary methods interfere with the work of the surgeon. In these cases, it is essential to efficient surgical work. The apparatus should be carefully chosen and intelligently used. Pulmonary complications following the use of pharyngeal insufflation are not due to the method, occurring with no greater frequency than after other forms of anesthesia.

131 Waterman Street.

ABSTRACT OF DISCUSSION

DR. JOSEPH C. BECK, Chicago: Even if the instrument the author recommends is better, I believe the Beck-Mueller apparatus should not be discarded. I find no difficulty of any kind since using the motor-driven apparatus that was perfected by Dr. Mueller. The only thing I cannot agree with is to have the mouth wide open when the anesthetic is given. This anesthesia is not used at all in our clinic since we have adopted synergistic anesthesia. There is a combination of ether, olive oil and paraldehyd, the subcutaneous injection of morphin, ⅛ grain each hour, probably in combination with a 25 per cent. solution of magnesium sulphate. This anesthesia serves for all purposes in our line of work, and only in children have we thus far used anything but this rectal anesthesia, because we have not proved it to our satisfaction. Dr. Herb recommends paregoric instead of morphin. My objection to the motor-driven apparatus is the horrible smell of ether through the house, and the irritation which it causes, and then the noise it makes.

DR. EDWIN MCGINNIS, Chicago: I want to ask whether in using this motor-driven apparatus you can grade the amount of ether coming out of the end of the tube. The disadvantage of the Beck-Mueller apparatus in laryngeal surgery is that there is too much ether. If in this apparatus the control is better, if it will deliver a reduced amount of ether, I should say that it would be an advantage.

DR. ALBERT H. MILLER, Providence, R. I.: I would apologize to Dr. Beck for not having shown his very good apparatus, but I announced at the first that the forms of apparatus to be shown were selected only as types. The new apparatus shown does deliver a regular, measured dosage of ether vapor. The dosage can be regulated by varying the percentage of air which is allowed to pass through the ether chamber. The maximum capacity of the apparatus is greater than is usually required. I think that we have in this apparatus an extremely delicate, scientific sort of instrument which will maintain an exact degree of anesthesia for an indefinite period. We have found that in addition to the tonsil and septum operations, cases of goiter, diverticulum of the esophagus, tumor of the larynx, and other difficult cases which are often done under local anesthesia with great discomfort to the patient for lack of such a delicate apparatus, can be done perfectly by means of this apparatus, and for this reason I wish to introduce it.

EXPERIMENTAL STUDIES ON THE ETIOLOGY OF ENCEPHALITIS

REPORT OF FINDINGS IN ONE CASE *

EDWARD C. ROSENOW, M.D.
ROCHESTER, MINN.

It has been my privilege to study the etiology of encephalitis during the past three years through the cooperation of Dr. Shelden and his associates of the Section on Neurology of the Mayo Clinic. From the outset of this study it was considered possible that the disease might be caused by a filtrable virus or by bacteria of more ordinary morphology but with peculiar neurotropic properties. The methods employed were such as to test both possibilities. Altogether, forty cases, representing different clinical types of the disease, have been studied. A large number of animals have been injected; the microscopic study of sections is not yet completed, and other details in the mass of experimental data are awaiting final analysis.

In order to illustrate in general the scope of the work and the results obtained, I shall report at this time in some detail the findings in one case.

Mrs. P. E., aged 53 years, first seen, March 25, 1921, complained chiefly of a nervous breakdown, the symptoms of which began in January, 1921, when, after a period of hard work and worry, she suddenly felt weak and tired, and developed noticeable trembling all over her body. This trembling lasted for about a week, and from that time on she had been either in bed or sitting in a chair most of the time. Her daughter said that her mother had been irrational for some time.

At the time of the first examination she was markedly excited. She had numerous hallucinations, marked anxiety, both motor and psychic restlessness, a rapid pulse, and slight increase in temperature. Physical examination revealed badly

* From the Division of Experimental Bacteriology, Mayo Foundation.
*Read before the Section on Nervous and Mental Diseases at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

infected teeth, hyperemic mucous membrane in the nasopharynx, and slightly enlarged heart. She could move her legs, although the muscles were very weak. Sensations were apparently normal, except for numbness over the dorsum of the left foot. The knee jerks were normal. The pupillary reflexes and fundi were negative. The urine contained a small amount of albumin and pus. Examinations of the blood, including the Wassermann reaction, were negative.

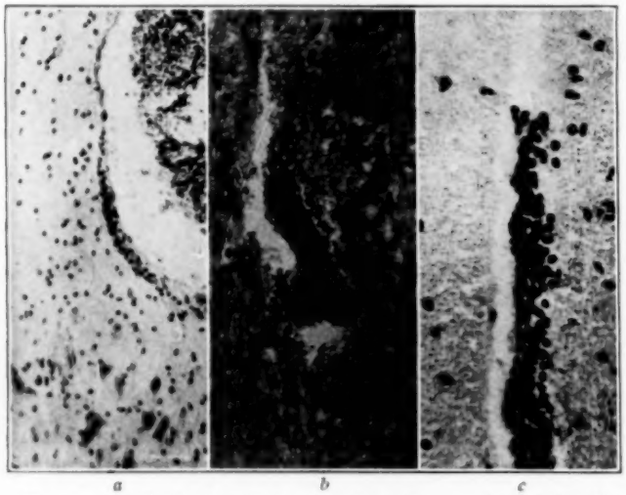

Fig. 1.—Localized adventitial and perivascular round-cell infiltrations in the base of the brain of the patient; hematoxylin and eosin; *a* and *b*, × 100; *c*, × 200.

March 28, the patient was admitted to Stanley Hospital, where she continued to have hallucinations of hearing and sight. She soon became lethargic and stuporous, and developed external ocular palsies and general twitchings of the muscles, especially of the lower extremities and the abdominal wall. During her illness in the hospital the leukocyte counts were 6,900 and 8,100; the hemoglobin was 75 per cent. The Wassermann reactions on the blood and spinal fluid were negative, and the Nonne on the latter was positive. The spinal fluid was clear and contained one lymphocyte. On the ninth day the pulse became very rapid and irregular, and the temperature rose. The patient died rather suddenly in profound coma on the night of the tenth day. One injection of the antiencephalitis serum was given shortly before death without effect.

Necropsy revealed encephalitis, senile atrophy of the ovaries, small cervical polyp, and marked sepsis of upper and lower teeth. The convolutions of the brain stood out prominently and were extensively injected. On section of one half of the brain, a golden raised area measuring 1.5 cm. in diameter was found in the region of the pons; otherwise the brain presented no gross abnormalities. The abdominal viscera, the lungs and the heart disclosed moderate cloudy swelling, but no other changes.

Histologic examination of the kidneys revealed an occasional glomerulus replaced by a hyaline scar, and thickening of Bowman's capsules, with hyaline changes in some of them. The walls of the blood vessels were slightly thickened. Histologic examination of sections of the brain revealed no noteworthy lesions, except those in the basal ganglions. A number of sections from these areas revealed moderate perivascular infiltration, localized adventitial round-cell infiltration of the larger blood vessels (Fig. 1), areas of hemorrhage, usually around the blood vessels, moderate degeneration of the ganglion cells, and neurophagocytosis (Fig. 2). Sections of the golden area, which resembled grossly a resorbing area of hemorrhage, revealed a striking phagocytosis of brownish pigment granules by the nerve ganglion cells (Fig. 3). Prolonged search of sections of the base of the brain, stained by the Giemsa and Gram-Weigert methods, revealed undoubted diplococci varying much in size and shape (Fig. 4 *a*, *b*, *c* and *d*). In some instances large, swollen diplococci seemed to be breaking into a variable number of small forms (Fig. 4 *e*). These were found in the lesions or immediately adjacent to them. In sections of the cerebral cortex and medulla, which showed no changes, the demonstration of micro-organisms was not accomplished.

Cultures of emulsions of the base of the brain yielded a pure growth of the green-producing streptococcus. A similar streptococcus was isolated from the apexes of the infected teeth after death, and from the pyorrhea pockets and the blood during life. Cultures from the blood after death yielded a pure growth of the hemolytic streptococcus. Cultures from the cerebral cortex, the medulla, the cervical cord and the spinal fluid were negative.

EXPERIMENTS

Injections into animals were made with (1) the sediment of the dehemoglobinated blood obtained during life; (2) the pure culture of hemolytic streptococcus obtained from the blood after death; (3) nasopharyngeal washings in salt solution; (4) filtrates of the nasopharyngeal washings; (5) salt solution suspensions of pus aspirated from pyorrhea pockets; (6) cultures from the apical infection of an incisor removed in a sterile manner at necropsy; (7) emulsions and filtrates of the central nervous system; (8) the spinal fluid, and (9) cultures from a lesion in the base of the brain.

The sediment from the dehemoglobinated blood was injected intracerebrally into two rabbits. Both remained well. The culture from the blood after death, which yielded a pure growth of hemolytic streptococcus, was injected intracerebrally into three rabbits, two receiving 0.1 c.c., and one 0.1 c.c. of a 1:10 dilution. All died of meningitis within twenty-four hours, and countless numbers of hemolytic streptococci were found in the turbid spinal fluid.

A suspension in salt solution of the nasopharyngeal washings was injected intracerebally (0.2 c.c.) into one rabbit; the animal died within twenty-four hours. Necropsy revealed a large area of hemorrhage at the point of injection, hemorrhages between the cerebellum and medulla, and slightly turbid spinal fluid. The cultures became contaminated and were lost.

The filtrate of the nasopharyngeal washings was injected intracerebrally (1.5 c.c.) into each of two rabbits. Both remained well. One was chloroformed one week after

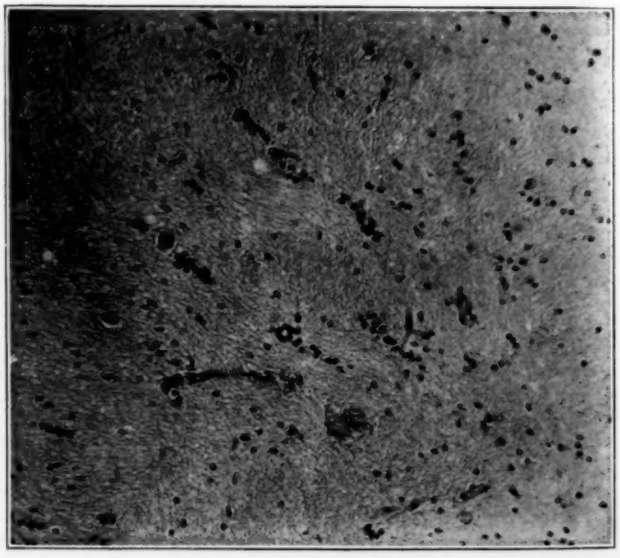

Fig. 2.—Collections of round cells and neurophagocytosis in the pons; hematoxylin and eosin, × 100.

inoculation, and the findings in the brain and cord were negative. A rabbit inoculated intracerebrally with an emulsion of the brain of this rabbit remained well.

A salt solution suspension of the pus from pyorrhea pockets was injected (0.2 c.c.) into one rabbit. The animal became comatose, developed twitchings of muscles and occasional spasms of the abdominal muscles and extremities, and died twenty-four hours after the injection, apparently from respiratory failure. Cultures from the brain on blood-agar

plates yielded countless numbers of colonies of green-producing streptococci. Those from the blood were negative.

One-tenth cubic centimeter of a subculture of the brain of this rabbit in the tenth generation was injected intravenously into one rabbit, which remained well.

The primary culture in glucose-brain broth from the infected incisor, which on plating yielded many colonies of green-producing streptococci and a few colonies of staphylococci,

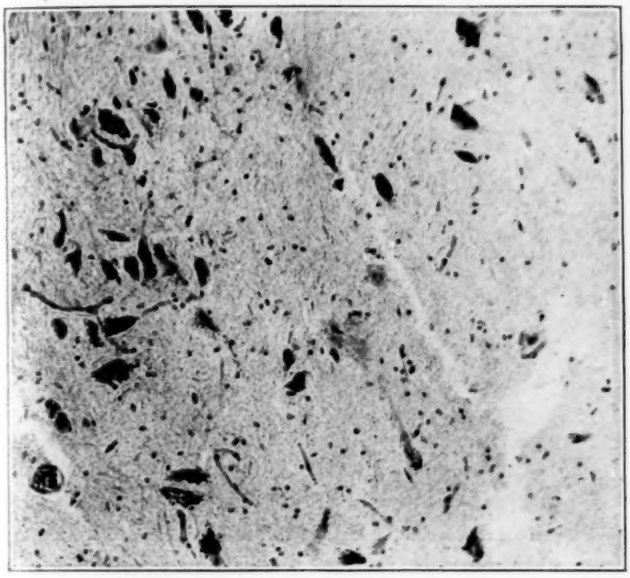

Fig. 3.—Pigmentation of ganglion cells in lesion showing brownish discoloration; hematoxylin and eosin, × 100.

was injected intracerebrally into two rabbits, one receiving 0.1 c.c., the other 0.1 c.c. of a 1:10 dilution. Both died within forty-eight hours. The brain of one yielded a pure culture of the green-producing streptococcus; the brain of the other yielded this organism and a few colonies of staphylococci. Inoculation from a single colony of the green-producing streptococcus of the fresh growth on a blood-agar plate was made into glucose-brain broth. This was rapidly transferred, and a five-hour culture in the tenth culture generation was used to soak a strip of gauze, with which the nose of one rabbit was packed, and to inject intracerebrally one rabbit (R 2523), with 0.1 c.c., of a 1:100 dilution. The rabbit whose nose was packed remained well for forty-eight hours, when the pack was removed. On the third day it sat quietly in the cage; respirations were increased; it was irritable and tremulous, and disinclined to hop. On the fourth day it developed ascending paralysis, from which it died. The spinal fluid was turbid; the medulla and the cervical cord contained small hemorrhages; the vessels of the cerebrum were congested, but there were no hemorrhages. There was no exudate surrounding the olfactory lobes. Cultures of the blood were sterile; those from the brain and the spinal cord yielded the streptococcus. Sections of the brain showed marked leukocytic infiltration around the vessels of the meninges, and infiltration of the pia over the base of the brain and the cervical cord. Gram-positive diplococci were found in the lesions, but not elsewhere. The findings in the rabbit injected intracerebrally were as follows:

Rabbit 2523, weighing 1,390 gm., was injected, April 13, 1921. April 14, at 7 a. m., it appeared well; at noon it seemed well, but was somewhat drowsy, and at 2 p. m. it sat quietly as if half asleep. At 9 p. m., it still appeared sleepy, and slightly tremulous in hopping. April 15, at 7 a. m., there was marked tremor of the anterior part of the body; this became worse when the animal hopped. At noon it had developed peculiar motions of the head, synchronous with a vertical nystagmus. At 7 p. m., it sat quietly in the cage; respirations were slow, the left eyelid drooped, and the upper eyelids twitched rhythmically; this was peculiar, as the right eyelid moved quickly downward, the left moved upward, and vice versa. The animal responded slowly to stimuli, and when it hopped a coarse tremor and occasional twitchings of the muscles of the anterior part of the body were noted. April 16, the animal was undoubtedly better, though it was still sleepy, and ataxic in hopping; the peculiar rhythmic movements of the eyelids had disappeared. April 18, the animal was less sleepy and less ataxic. April 20, the lethargic symptoms had become worse. The animal hopped slowly and stiffly, and only when goaded. Response to stimuli was delayed. April 21, at 9 a. m., it sat as if asleep. It could be aroused, but responded slowly, and immediately after being prodded it apparently fell asleep in the characteristic attitude, the head held somewhat forward, the ears erect and in tension, and the eyes half closed. At 11:30 a. m., the somnolence was marked. The animal was photographed sitting up, lying on its side, and on its back, sound asleep in each position (Fig. 5). The next day, at 6:45 a. m., it sat quietly in the cage, apparently fast asleep. Slight or moderate stimulation failed to arouse it. If it was pushed to one side and lost its balance, it would right itself and assume its characteristic position. When forced to hop, it did so very slowly and immediately went to sleep. At 9:30 p. m., the condition was unchanged. April 28, the animal was undoubtedly less lethargic; it responded more promptly to stimuli; its head tilted to the left. April 30, the lethargy had largely disappeared, but the animal held its head markedly to the left. May 5, it appeared wide awake, was alert, and ate normally. The tilting of the head had become more marked, so that it was held in an almost horizonal plane. There was a tendency to fall to the left. May 18, the condition was unchanged. May 20, snuffles developed, and severe infection of the right eye. May 22, the animal was found dead. There were no gross lesions in the brain or the cord. The nostrils contained mucopus. Cultures from the blood and the brain were completely overgrown by a spreading gram-negative bacillus. Sections of the brain showed several areas of round-cell infiltration in the corpus striatum along the blood vessels (Fig. 6), and central portion of the cerebellum near the juncture of the pons. There were no lesions in the choroid plexus, meninges, medulla or cervical cord.

Approximately a 20 per cent. emulsion from the base of the brain and lesion in the pons was injected intracerebrally directly, in doses of 1 c.c., into three rabbits, and 1.5 c.c. into one monkey. Two of the rabbits and the monkey

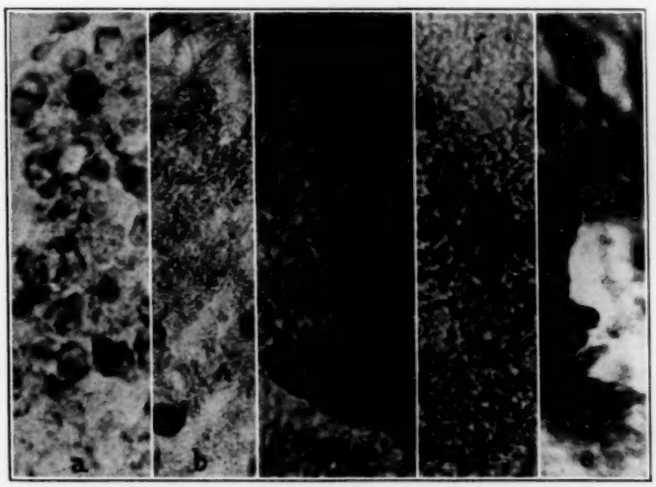

Fig. 4.—Diplococci in lesions in the basal ganglions: *a*, area of hemorrhage in the pons, Gram-Weigert, × 1,000); *b* and *c*, smears from pons after preservation in 50 per cent. glycerol, Giemsa, × 1,000; *d* and *e*, areas adjacent to perivascular infiltration in the pons, Gram-Weigert, × 1,000.

remained well, and sections of the brain and cord eighteen and twenty-one days after injection, respectively, revealed no changes. One rabbit died the eleventh day. No gross lesions were found in the brain or the cord. The peritoneal cavity contained a fine fibrinous film and a moderate quantity of clear fluid. Cultures from the blood and the brain, and from the filtrate of the brain in glucose-brain broth and in ascites

tissue fluid remained negative. The emulsion of the brain of this rabbit was injected intracerebrally into one rabbit, and the filtrate of the brain emulsion into two rabbits. All remained well for eleven days. They were chloroformed. Sections of the brain and the cord were normal. The emulsion of the brain of the rabbit injected with the brain emulsion was injected into two rabbits, and the filtrate into one. Again all three rabbits remained well.

A pure culture of the green-producing streptococcus was isolated from the emulsion of the brownish lesion at the base of the brain of the patient. This culture was rapidly transferred in warm glucose-brain broth, from three to six subcultures being made every twenty-four hours for forty-six culture generations. When in the tenth subculture, 0.1 c.c. was injected intravenously into one rabbit (R 2524), and 0.1 c.c. of a 1:100 dilution intracerebrally into another rabbit (R 2526), and the nose of one (R 2521) was packed with gauze soaked in the fresh undiluted culture. The rabbit injected intravenously did not develop symptoms, and was chloroformed eleven days after inoculation. The cultures from the brain and the blood were negative. Sections revealed moderate round-cell infiltration immediately surrounding the left lateral ventricle (Fig. 7). The rabbit injected intracerebrally with the diluted culture acted peculiarly at 7 o'clock the morning after the day of injection. It stretched its head far forward slowly, and when forced to hop it often bumped its nose into the side of the cage. At 12 m., its condition was about the same; at intervals it still acted peculiarly as if mentally deranged. The respirations were increased, and tremor of the anterior part of the body had developed. At 4 p. m. it continued to act in a singular manner, pushed its nose into the side of the cage and under its mates, and at intervals turned its head sharply to the right. It had developed twitchings of the right eyelids. In the morning of the second day after injection it was found dead. The vessels of the meninges were markedly congested. Cultures from the brain yielded a pure growth of the green-producing streptococcus; those from the blood remained sterile.

Rabbit 2521, weighing 2,000 gm., whose nose was packed, April 13, had developed purulent discharge from the right nostril the following day, but otherwise it appeared well when the pack was removed. April 15, at 7 a. m., the animal was tremulous and hyperesthetic, and the hind extremities

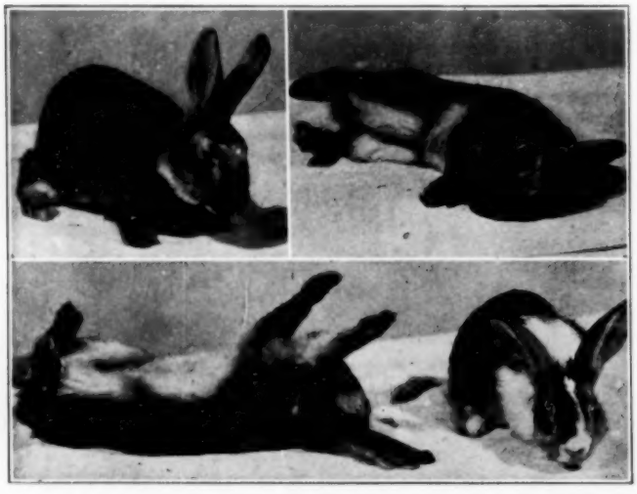

Fig. 5.—Rabbit 2523, showing marked lethargy, with normal control.

were definitely weak. At 3 p. m., the respirations were increased, and horizontal nystagmus with twitchings of the eyelids was noted. There were peculiar tic-like movements of the head, with a tendency to retraction, but no spasms. At 3:30 p. m., the animal lay quietly, with almost complete paralysis of the hind extremities, and chorea-like movements of the head, which was tilted somewhat to the left. The horizontal nystagmus continued and was synchronous with respirations. At 6 p. m., the animal was restless. It made repeated violent efforts to get on its feet and to hop, but was unable to do so on account of weakness in the extremities. It threw its head from side to side, and nystagmus was more marked. At 7 p. m., the condition was unchanged. The following day its respirations were slow, it was extremely weak, and the fore and hind extremities were completely paralyzed. At 10:30 a. m., it was found dead.

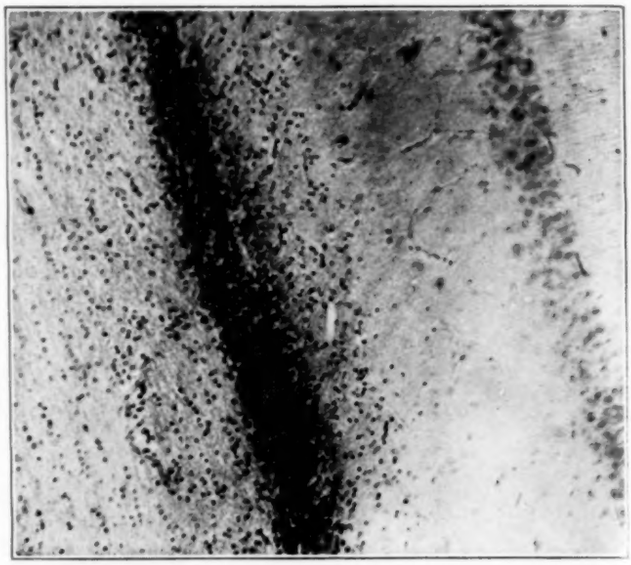

Fig. 6.—Section of cerebrum of rabbit shown in Figure 5; area of round-cell infiltration along a blood vessel in the corpus striatum; hematoxylin and eosin, × 100.

At necropsy, numerous hemorrhages were found in the medulla and throughout the length of the cord, which were most marked in the lumbar enlargement. The cerebrospinal fluid was somewhat turbid. The pia covering the pons, cerebellum and medulla was edematous. Smears revealed leukocytes, mononuclear cells and streptococci. Cultures from the brain yielded large numbers of green-producing streptococci; those from the blood yielded a few colonies of the same organism in pure culture. Sections of the brain showed marked perivascular and moderate diffuse leukocytic infiltration in the meninges, and perivascular infiltration in the cerebrum, especially marked at the base.

The fresh five-hour culture from the base of the brain in the forty-sixth culture generation was injected intracerebrally into two rabbits, one receiving 0.1 c.c., the other 0.1 c.c. of a 1:100 dilution. Both died within forty-eight hours of meningitis, and cultures from the brain yielded countless numbers of the organism injected in pure form.

One other rabbit was injected intracerebrally with 0.1 c.c. of a 1:100 dilution of the same culture after it was incubated at room temperature for forty-eight hours and exposed to direct sunlight for one hour. The plating of this culture at the time of injection still showed countless numbers of the green-producing streptococcus, but the animal remained well.

Besides the foregoing experiments, protection experiments with the monovalent antiencephalitis serum (H 18) were undertaken in rabbits and mice. Assuming that the spinal fluid and filtrate of brain emulsion would prove infectious, two sets of rabbits (six each) were injected intracerebrally with 1.5 c.c. each of the spinal fluid and the filtrate of the brain emulsion treated as follows:

Two rabbits were injected with the spinal fluid incubated for two hours with equal parts of salt solution, two with the spinal fluid treated with equal parts of normal horse serum, and two with the spinal fluid treated with equal parts of immune horse serum. In the second set, six rabbits were injected with the filtrate of the brain emulsion treated in the

same way with salt solution, normal horse serum, and immune horse serum, respectively. Of the twelve rabbits injected, all remained well except one, which died of intercurrent infection (snuffles) four days after inoculation. Cultures from the brain and blood yielded gram-negative bacilli; sections of the brain were negative.

The protection experiments in mice were undertaken with the strain isolated from the apex of the infected incisor after one animal passage, and with the culture from the base of the brain of the patient, both being in the tenth culture generation. Five-hour cultures of these strains in glucose-brain broth were injected intraperitoneally in doses from 1.5 to 0.25 c.c., as indicated in Table 1. In each series, one set

TABLE 1.—SUMMARY OF PROTECTION EXPERIMENTS IN MICE

	Strain Isolated from the Infected Tooth			Strain Isolated from the Brain		
Dose in C.c.	Series Untreated	Series Treated with Normal Horse Serum	Series Treated with Antiencephalitis Serum	Series Untreated	Series Treated with Normal Horse Serum	Series Treated with Antiencephalitis Serum
1.5	Death	Death	Death	Death	Death	Death
1.0	Death	Death	Survived	Death	Death	Survived
0.5	Survived	Survived	Survived	Death	Survived	Survived
0.25	Death	Survived	Survived	Death	Survived	Survived

of mice was used as controls. One set was given subcutaneously 0.2 c.c. of normal horse serum at the time of the intraperitoneal injection, and one set 0.2 c.c. of antiencephalitis serum (H 18). All but one of the untreated mice in the two series died. The normal horse serum appeared to have slight protective effect. The four animals injected with the two smaller doses survived. The antiencephalitis serum had more marked protective power. Only two of the eight mice, those receiving the largest dose, succumbed. Of the thirteen mice that died, death occurred within forty-eight hours in nine; three died on the third day, and one on the fifth.

The strains from the tooth and the brain produced small, sometimes umbilicated, nonadherent, greenish colonies on

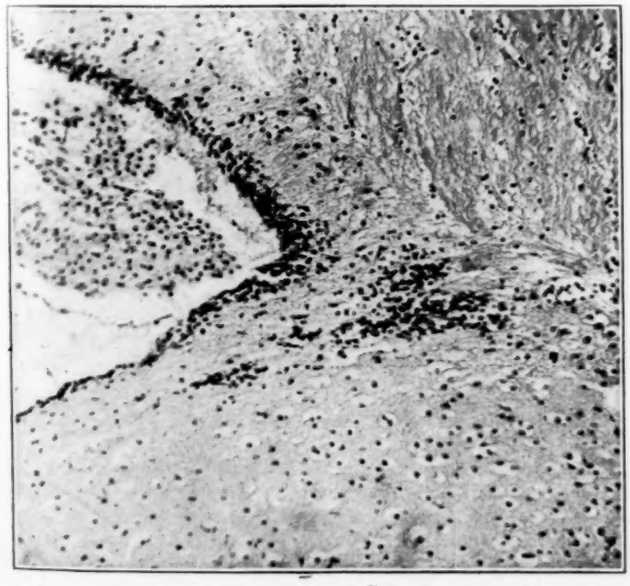

Fig. 7.—Round-cell infiltration adjacent to lateral ventricle in rabbit (R 2524) injected intravenously with the culture from the brain after ten subcultures; hematoxylin and eosin, × 100.

blood-agar plates, and a diffuse growth in glucose-brain broth. The organisms varied greatly in size, depending on the age of the culture and on the medium (Fig. 8). Large, swollen, elongated cocci and diplococci often appeared to be dividing longitudinally and transversely. The organisms grown in ascites tissue fluid were smaller and more regular in size than those in glucose-brain broth. The fermentation powers of the two strains were identical. Glucose, lactose, maltose and saccharose were fermented; inulin, mannite and salicin were not. Both strains were insoluble in bile.

AGGLUTINATION EXPERIMENTS

The agglutination experiments are summarized in Table 2. The antigens used were fresh cultures in

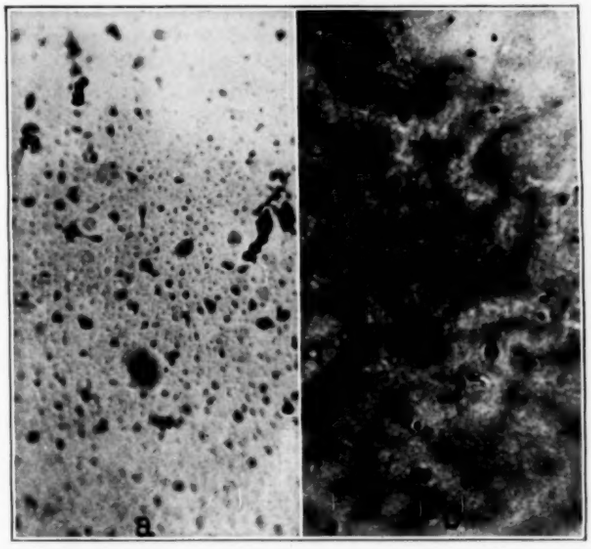

Fig. 8.—The streptococcus as isolated in cultures: *a*, glucose-brain-broth culture from the filtrate of the nasopharyngeal washing; *b*, ascites tissue culture from the filtrate of the brain emulsion; Gram-Weigert, × 1,000.

glucose-brain broth. The figures in the table following the point in the numbers indicating the strain represent the culture generation, the exponents the animal passage. The slide method was used, in which one part of each of the serums was mixed with two parts of the

TABLE 2.—AGGLUTINATION EXPERIMENTS

				Agglutination by Various Immune Serums					
Experiment	Strain	Place of Isolation	Date of Agglutination Test	Poliomyelitis 312	Encephalitis Horse 18	Influenza Horse 15	Normal Horse	Pneumococcus I	Pneumococcus II
1	4268	Gum abscess	4/ 8/21	0	2	0	0	0	0
2	4268	Infected molar	4/ 8/21	0	2	0	0	0	0
3	4268	Nasopharynx	4/ 8/21	0	0	0	0	0	0
4	4268	Filtrate, naso-pharyngeal washings	4/11/21	2	3	1	0	0	0
5	4268.3		4/12/21	3	2	1	1	0	0
6	4268	Blood during life	4/ 9/21	2	3	0	1	0	0
7	4268.3		4/ 9/21	1	2	0	0	0	0
8	4268	Base of brain	4/10/21	2	2	0	0	0	0
9	4268.9		4/12/21	1	3	1	0	0	0
10	4268.48		5/ 4/21	3	4	0	0	0	0
11	4268.65		5/11/21	2	2	1	1	1	3
12	4268.68		3/14/22	3	3	3	3	3	3
13	4268^2	Infected incisor	4/10/21	0	2	0	0	0	0
14	$4268^2.2$		4/ 9/21	2	3	0	0	0	0
15	$4268^5.2$		4/10/21	2	3	0	0	0	0
16	$4268^2.9$		4/12/21	2	3	0	0	0	0
17	$4268^2.30$		4/23/21	2	3	0	0	0	0
18	4268.46^2		5/ 7/21	2	3	0	0	0	0
19	4268.46^2		5/ 7/21	2	3	0	0	0	0
20	$4268^2.5$		3/14/22	3	3	3	3	2	3

antigen, and the agglutination recorded within ten minutes. The poliomyelitis, encephalitis, and influenza immune serums were prepared in horses by repeated injections of green-producing streptococci isolated in these respective diseases. Partial agglutination of the primary culture from three possible infection atriums, gum abscess, pyorrhea pockets and nasopharynx, occurred in the antiencephalitis serum in the first two (Experiments 1 and 2), but not in the last (Experiment 3). The primary culture and the third culture

generation of the filtrate of the nasopharyngeal washings were agglutinated by the antipoliomyelitis and the antiencephalitis serums, and slightly by the antiinfluenza serum (Experiments 4 and 5). Similar results were obtained with the strain isolated from the blood during life (Experiments 6 and 7). Experiments 8 to 12 indicate the results obtained with the streptococcus isolated from the brain under different conditions. It was agglutinated specifically by the antipoliomyelitis and the antiencephalitis serums as isolated (Experiment 8), and after forty-eight rapidly made subcultures (Experiments 9 and 10). After sixty-five rapidly made subcultures there was a shifting of agglutination to Type II antipneumococcus serum (Experiment 11), and after many subcultures nearly a year later (Experiment 12) it was agglutinated by all the serums. Experiments 13 to 20 indicate similar results obtained with the strain isolated from the infected tooth. Specific agglutination occurred in either or both the antipoliomyelitis and antiencephalitis serums as isolated, and after many rapid transfers (Experiments 13 to 19), but not after prolonged cultivation (Experiment 20). Both strains appear to have become saprophytized after long residence on artificial mediums, as they were agglutinated by all the serums.

SUMMARY

The etiologic relationship of the foci of infection and of the green-producing streptococcus to the encephalitis in this patient seems to be established. The organism was isolated from the infected teeth, from the filtrate of the nasal washings, from the blood during life, from an emulsion of the base of the brain after death, and from the filtrate of the brain emulsion. It was demonstrated in the lesions after prolonged search (Fig. 4), and proved to be absent elsewhere. The microscopic changes in the brain were typical of this disease (Figs. 1 and 2). The streptococcus from the infected teeth, from the blood, and from the base of the brain was identical in morphology, cultural characteristics, and in immunologic properties (Table 2). The strains, isolated from one infected tooth and from the brain, possessed well marked neurotropic properties. The chief symptoms of the patient, such as lethargy, weakness of the extremities, oculomotor disturbances, spasms and tremors of muscles, and apparent mental derangement, were produced by intravenous and intracerebral inoculation of small doses, and by packing the nose with gauze soaked in the culture, even after many subcultures. The lesions of the brain and the cord of the animals were also characteristic. The organism was isolated from the brain and the spinal fluid, and demonstrated in the lesions in the animals showing symptoms and those examined relatively soon after inoculation. In those that recovered and were chloroformed long after injection, the demonstration of the organism was often impossible.

In a series of similar experiments with material from normal throats, the streptococcus having these peculiar properties was not found. Of the fourteen rabbits injected intracerebrally with salt solution suspensions of nasopharyngeal swabs from fourteen normal persons, five died of meningitis within forty-eight hours. In four green-producing streptococci, and staphylococci, and in one hemolytic streptococci were isolated. The green-producing streptococci were not agglutinated by the antiencephalitis serum, and sections of brain and cord showed only leukocytic infiltration of the meninges. Nine remained well and were chloroformed for examination in from ten to nineteen days after injection. Cultures of the brain, the spinal fluid, and the blood were negative, and sections of the brain and the cord revealed no changes.

The hemolytic streptococcus isolated from the blood of the patient after death produced suppurative meningitis when injected intracerebrally. The negative results following intracerebral injections in twenty-six rabbits and one monkey, of brain emulsions, filtrates of brain emulsions, filtrates of nasal washings, sediments of the dehemoglobinated blood, from which the characteristic streptococcus was isolated, of spinal fluid, and brain emulsions and filtrates of animals which were injected with these and did not develop symptoms, may be interpreted as proving that a filtrable virus, as usually understood, was absent in this case, and that the infecting power of the relatively few streptococci in these materials was insufficient to overcome the resistance of the animals.

The agglutination and protection experiments with the monovalent antiencephalitis serum prove the close relationship of the streptococcus from this case to the one isolated from the case of typical epidemic (lethargic) encephalitis with which this serum was prepared.

The similarity in cultural characteristics and immunologic properties of most of the strains isolated from the different cases studied has been demonstrated. Mice and rabbits have been protected with this serum against the heterologous strains. Moreover, encouraging results have been obtained in a number of patients to whom it was possible to administer the serum soon after the onset of symptoms of encephalitis. These and other findings will be reported in detail elsewhere.

ABSTRACT OF DISCUSSION

DR. LEWIS J. POLLOCK, Chicago: I should like to ask Dr. Rosenow, first, as to whether the perivascular infiltrations noted in the brain were present to any marked degree in other organs of the body, and, second, whether any particular part of the brain showed a specific vulnerability to the pathology produced by this diplococcus.

DR. E. C. ROSENOW, Rochester, Minn.: There was marked evidence of the tendency of this organism to localize in the basal ganglions of the brain. This occurred not only on intracerebral inoculation, but also following intravenous inoculation and following the packing of the nose with gauze soaked in the culture. The sections of other organs showed no perivascular infiltrations and no other noteworthy lesions, aside from moderate cloudy swelling.

The Swedish Race Institute.—During the first year of the working of this state supported institution at Upsala, Sweden, the research was restricted to a single province, but it is proposed to extend the work throughout the whole country, compiling data on heredity from the standpoints of physiology and pathology. A museum is planned, as well as experimental research. The commission in charge has seven members, including Dr. Lundborg, the director. The staff consists of the archives custodian, a medical assistant, a genealogist, an anthropologist and a photographer. The settled character of most of the population in Sweden and the way in which the generations succeed each other in the same rural district renders Sweden peculiarly favorable for research on heredity. Lundborg has published in the *Svenska Läkaresällskapets Handlingar* a number of studies on racial and culture problems in the light of medical biology.

CARE OF THE BLADDER IN PREGNANCY, LABOR AND THE PUERPERIUM *

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The intimate relationship both anatomically and functionally between the bladder and the female generative organs is largely overlooked in our management of the parturient woman. When we remember that, for the most part, the female bladder has its blood, lymphatic and nerve supplies in common with the generative organs, we are in a position to realize that the changes of pregnancy in the uterus and vagina must largely be duplicated in the bladder. Congestion, edema, increased vessel caliber, hypertrophy of the mucosa and muscle coats, increased capacity and altered form are all changes which the bladder shares with the pregnant uterus.

THE BLADDER IN PREGNANCY

Pelvic congestion and the direct pressure of the enlarged uterus, as yet a pelvic organ, account for most of the bladder symptoms of the first trimester. Increased vascularity of the bladder wall can be noted with the cystoscope as early as the sixth week. The trigon is naturally the first area to show this change. Radeaux [1] showed that sixty-three out of a series of 124 pregnant women had bladder symptoms at some time during the nine months. Twenty-six of the sixty-three had symptoms in the first trimester. Frequency, dysuria, bladder pain and hemorrhage are the complaints in the order of frequency.

As the uterus increases its anteroposterior diameter, the space available for bladder expansion in that direction is diminished. The result is a pocketing of the bladder at the sides. With the woman on her feet and the uterus in anteversion, the fundus presses the bladder walls downward and forward against the symphysis. Dysuria is often the result, especially in a woman forced to be continually on her feet. Rest in bed will relieve these patients.

Urinary frequency, when not associated with infection, usually disappears when the bladder rises out of the pelvis. Bladder hemorrhage occurring at or after the end of the first trimester can usually be demonstrated as coming from varices in the wall. There are a few cases of retention reported developing in early pregnancy in women neurologically and serologically negative with uteri apparently in normal position. One such case which I saw cleared up when the woman aborted spontaneously.

Malpositions of the pregnant uterus, particularly prolapse and retroversion, produce the most serious complications of the first trimester: retention, overdistention, cystitis and possibly slough of the bladder mucosa. The degree of retroversion regulates usually the type and time of onset of bladder symptoms. If the cervix is thrown against the symphysis or into the region of the trigon, symptoms develop early. Dysuria, inability to urinate, the incontinence of retention and the discomfort and pain of distention are the early symptoms. If reposition of the uterus is accomplished at this time, bladder infection may not develop. Occasionally it is necessary to open the abdomen in order to replace the uterus. High fever, rapid pulse, malaise, abdominal and kidney tenderness, vomiting, delirium and shock are reported in the graver cases. Sudden withdrawal of the entire bladder content has been followed by hemorrhage and shock. The use of a trocar is occasionally necessary to empty the bladder. As the condition in the advanced cases is a gangrenous cystitis, the production of a vesicovaginal fistula admits the passage of the slough, resulting frequently in recovery. Deaths have been reported from hemorrhage, shock, bladder rupture, peritonitis and resulting kidney involvement.

Pelvic congestion and edema associated with mild retention and moderate malposition of the pregnant uterus predispose to bladder infections which appear in the latter part of the first trimester and later throughout pregnancy. We now know, however, that there is no justification for the diagnosis of cystitis in pregnancy unless the kidney pelves have been excluded. Torsion of the ureter due to uterine dextroversion and urinary retention are now believed to be the chief factors in the production of pyelitis in pregnancy. Weibel [2] had difficulty in catheterizing the ureters of forty-six out of 100 pregnant women. The same author believes that the staphylococcus and streptococcus infections of the renal pelvis are of the ascending type, and that infection with *B. coli* occurs only in the presence of urinary and intestinal stasis. Research has shown that infection of the kidney may enter through several paths. Embarrassment of bladder function, due to the increased size of the uterus, predisposes to urinary infection in the latter two thirds of pregnancy. Frequency and burning urination should always direct one's attention to the urinary system when unilateral pain, either abdominal or dorsal, is a complication of pregnancy. One is never justified in operating for acute abdominal conditions until the kidney pelves and the bladder are proved negative. Tenderness in the costovertebral angle is not constant in pyelitis. It is surprising how quickly pain is relieved in the ordinary case, once the patient is off her feet. Milk diet, free catharsis, posture, acid sodium phosphate and hexamethylenamin bring relief in most cases. Catheter drainage, while necessary in the graver cases, is advocated largely by the urologic surgeons. If the condition is so serious as to make the induction of premature labor necessary, one can be sure that the termination of labor alone will not cure the condition. Every case of pyelitis must be carefully followed after labor.

In the last months of pregnancy, owing to the pressure of the presenting part against the bladder and urethra, one meets patients complaining of frequency, incontinence and occasional ischuria. These symptoms naturally appear earlier in primiparas. Occasionally, pyelitis develops or reappears at this time. The actual bladder space has been largely obliterated, and the organ sacculates at the sides, the so-called saddle bag bladder. Residual urine is present in many of these patients. One frequently notes, while performing a cesarean section, that, owing to the altered contour of the bladder, the preliminary catheterization has been incomplete.

THE BLADDER DURING LABOR

The onset of labor finds only the upper portion of the bladder in the abdomen. As the cervix dilates and

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

1. Radeaux: Arch. gén. de méd. **2**: 1873-1883, 1905.

2. Weibel: Arch. f. Gynäk. **99, 100,** 1913.

the lower segment retracts, the vesical walls are carried upward. Late in labor the urethra has been shown to be definitely elongated. The bladder base is lower in the female than in the male, and its tense, ligamentous attachments predispose it to traumas in the expulsive stage. The woman with a contracted pelvic outlet in the anteroposterior diameter, or a generally contracted pelvis, is predisposed likewise to injury of the supporting structures of the bladder and urethra.

Reflexly, as well as by actual obstruction, the full bladder delays dilatation of the cervix and expulsion of both fetus and placenta. The tendency to allow women to labor with considerable quantities of urine in the vesical cavity predisposes to separation of the pubovesical ligaments and subsequent relaxation of the vaginal wall, cystocele and urethrocele. Owing to the stretching of the interureteral ligament at the end of pregnancy, the ureter orifices tend to remain open, and the stress and strain of labor, with the increased bladder pressure during the expulsive efforts, may light up old infections of the kidney pelvis and bladder.

Skene [3] and Emmett,[4] who in their day saw large numbers of bladder injuries, have left us many vivid descriptions. Emmett said that injuries to the urethra were far more common than third degree tears. Both authors showed that the majority of injuries in the first stage occurred above the trigon; those of the expulsive stage were located at or below that structure. Winckel, from necropsy material, and Ruge [5] and Stoeckel,[6] with the cystoscope, showed that the bladder and urethra receive injury in practically every labor. Laceration, edema, contusion and hemorrhage were most common and pronounced in the bladder of the primiparous woman. Long labor, instrumentation, contracted pelvis and dry labor predispose to trauma. Ruge showed that the postpartum difficulties with the bladder occurred in direct proportion to the amount and severity of the injury to the bladder wall. All cases in which hemorrhage in the wall of the bladder was demonstrable with the cystoscope required catheterization. Injuries to the ligamentous bladder attachments are probably more common than those demonstrable in the wall. "The crying need of obstetrics," says one authority, "is a method of detecting these injuries before fascial retraction and atrophy set in."

Formerly, vesicovaginal fistulas were not uncommon as a complication of labor. Skene and Emmett both showed that necrosis through the prolonged pressure of labor was the most common cause of this complication. With more modern methods at our disposal, this is probably not true. Whenever possible, rents in the bladder wall are repaired at once. If the lesion is due to devitalization and necrosis, it will not appear for a number of days and its repair is attempted some time later.

Peterson and Williams have shown that fistula is not an uncommon sequel of vaginal cesarean section and pubiotomy. Vaginal cesarean section in the last few weeks of pregnancy is particularly liable to result in injury to the bladder. As the bladder rests more to the right than to the left, pubiotomy is preferably done on the left side. Cases have been reported in which the bladder has been caught between the separated ends of the pubic bone, following pubiotomy. Constant pressure against the hips usually prevents this. Separation of the bladder attachments by the rotation of forceps or cranioclast is often accompanied by infection in and about the bladder. Bladder stones are occasionally reported as having obstructed labor. The larger stones were formerly treated by the production of a vesicovaginal fistula. With hospital facilities available, abdominal cesarean section would seem a better method of treatment.

The most common measures for the protection of the bladder in labor are, briefly, as follows:

1. Careful prenatal observation and diagnosis will give us an idea of the presence of old bladder lesions and infection, the presence of probable disproportion, and the possibility of interference being necessary at delivery.

2. Preservation of the membranes is conducive to shorter labors, better cervical dilatation and more complete retraction and bladder elevation.

3. Nurses and interns must be taught to keep the bladder and rectum of the parturient woman empty. Every operative delivery is preceded by careful catheterization.

4. Episiotomy releases the head posteriorly, takes off the pressure under the symphysis, and frequently spares the forceps.

5. Interference, whether it be forceps, extraction or craniotomy, should not be carried out in the presence of an undilated cervix.

6. The use of a flat retractor between the head and the bladder, advocated by Pomeroy, is of value when traction is necessary.

7. In dealing with posterior positions of the occiput, rotation with the forceps is dangerous. One cannot injure the bladder by manual methods of rotation.

THE BLADDER AFTER LABOR

The most common bladder complication of the puerperium is overdistention and ischuria. Hölste [7] catheterized thirty puerperal women daily for a week after labor. Catheterization was performed immediately after voiding, and the urine obtained was measured. Twenty-four hours after delivery he found a residual urine averaging 107 c.c. in the primiparas and 58 c.c. in the multiparas. This gradually diminished. At the end of a week it averaged only 14 c.c. in the primiparas and 7.5 c.c. in the multiparas. He concluded that usually puerperal women do not empty the bladder completely. In 1912, Steuernagel [8] measured the capacity of the female bladder at the various periods of pregnancy, labor and the puerperium. He showed that there is a steady increase in capacity after the fifth month. In the nonpregnant the bladder usually, as the patient says, "feels full" when 200 or 250 c.c. of sterile boric acid solution is introduced. The woman at term, Steuernagel found, did not develop this desire to urinate until 350 c.c. of the solution had been introduced. Under slight pressure she could tolerate 800 c.c. of solution in the bladder, as against 500 c.c. in the nonpregnant. The striking thing about these researches was that the patients from twenty-four to forty-eight hours pospartum did not develop desire until about 1,000 c.c. was in the bladder. Under pressure they tolerated 2,000 c.c.; in other

3. Skene: Diseases of Women, New York, D. Appleton & Co., 1898.
4. Emmett: Vasico-Vaginal Fistula, New York, William Wood, 1868; Principles and Practice of Gynecology, Philadelphia, H. Lea & Sons, 1884.
5. Ruge: Monatschr. f. Geburtsh. u. Gynäk. **20**: 233-237, 1904.
6. Stoeckel and Ruge: Cystoscopie der Gynäkologen, 1904.
7. Hölste, K.: Aerztl. Rundschau **16**: 233-237, 1906.
8. Steuernagel, W. S.: Ztschr. f. gynäk. Urol. **3**: 295-297, 1911-1912.

words, the capacity of the puerperal bladder was four times that of the nonpregnant.

In 1921, Walker [9] of Baltimore published an article giving the bladder pressure in millimeters of mercury in healthy males, at rest. This he did by attaching a blood pressure machine indirectly to a catheter. He found that when no expulsive efforts were made the manometer rose to 12 or 16 mm. of mercury, according to the amount of urine or sterile solution in the bladder. If more than 400 c.c. was introduced, the pressure fell slightly. Following this idea, we found that the pressure in healthy females was slightly less than in males. With this in mind, several puerperal women, unable to void, were catheterized and the bladder pressure measured. On the whole, they showed pressures averaging from 2 to 6 mm., or from one-fourth to one-third below that of the nonpregnant woman with a corresponding amount in the bladder. This work is still fragmentary, and will be reported in detail later. It is mentioned only as a phase in the subject of residual urine and retention.

All of us have noticed, I think, that the more extensive the repair work done after labor, the more likely the patient is to require catheterization. This is not surprising when one remembers that the pudic nerve supplying the perineum and vulva leaves the cord at about the same level as the nerves supplying the hypogastric plexus. The presence of large vaginal clots, a poorly contracted uterus, or an overfilled rectum favors retention and ischuria. Olshausen believed that catheterization after labor is necessary largely because of the elongated kinked urethra. Scanzoni and Winckel believed retention due to the inability of the bladder muscle to act. Schroeder says that the sensation of distention is less effective in the puerperal woman. Contracture or edema of the bladder neck, often considered a factor in these cases, is certainly seldom noted on passing the catheter. Reflexes set up by the pain experienced when urine comes in contact with injuries of the urethra or vulva have been cited as a cause of retention. Hysteria, posture, primiparity and decreased abdominal pressure are all factors in this condition. Postpartum sepsis produces retention appearing several days after labor from causes similar to those producing intestinal paresis in these cases. As a poorly contracted uterus predisposes to retention, so does retention tend to prevent firm contraction of the uterus. Careful consideration of retention convinces one that there is no single etiologic factor in any given case.

Pathogenic bacteria deliberately injected into healthy bladders have failed to produce infection in the absence of injury or residual urine. "When catheterization," says Curtis,[10] "is performed for indications other than the relief from retained urine, subsequent infection is a rarity. On the other hand, catheterization to relieve a distended bladder is followed by infection in spite of the greatest care." Postpartum accumulations of urine invite cystitis. Authors disagree on the prevalence of pathogenic bacteria in the bladder of the female. Unpublished work now being done in one of the larger clinics will probably show that pathogenic bacteria are present in the bladders of a considerable percentage of women in labor. The normal changes of pregnancy in the bladder therefore, plus the injuries of labor, provide all the factors necessary for the production of infection. What, then, is to be our course in preventing and combating puerperal overdistention, ischuria and cystitis?

The bladder should be emptied before the woman leaves the delivery table.

As soon after labor as is reasonable, she should be urged to void. If necessary, she may be propped up in bed to accomplish this.

Overdistention should not be allowed to develop. If the woman cannot be made to void, and in one's opinion the bladder is full, she should be catheterized.

The care of the bladder should not be left to an inexperienced attendant.

Strychnin, ergot and pituitary extract are sometimes of value in stimulating the bladder muscle, especially when augmented by the increased intra-abdominal pressure of the erect posture.

A hot enema, the electric current and suggestion are often effective.

Hexamethylenamin, in combination with acid sodium phosphate, should be given by mouth in most cases in which catheterization has been necessary.

After each catheterization, a dram of 20 per cent. argyrol should be left in the bladder.

If pus appears in a urine previously clean, daily irrigations of warm sterile boric acid solution usually clear the condition rapidly.

Barnes,[11] Skene and Chamberlain [12] all showed many years ago that once a patient is catheterized, even though she later voids spontaneously, the procedure should be repeated at least once daily until bladder tone has returned and residual urine has disappeared. That failure to do this is the most common cause of our so-called catheter cystitis has been shown by Taussig, Dudley,[13] Curtis and Sampson.[14] Once catheterization is necessary, its repetition for the prevention of a large alkaline accumulation is a conservative procedure.

Urinary incontinence following labor has no single cause. Usually one suspects the incontinence of retention. Skene described overstretching of the bladder neck due to pressure of the presenting part as a cause of puerperal incontinence. Temporary paralysis and lacerations of the urethra, sphincter and bladder wall must be considered in each case. If incontinence occurs soon after labor, one may suspect traumatic fistula or sphincter relaxation. The incontinence associated with sepsis, and the incontinence of fistula from pressure necrosis, are delayed in appearance. The treatment of each case varies with the origin. Strychnin and electrotherapy may be of value in paralysis and overstretching of the sphincter. Lesions of the bladder wall are repaired at once, if found at or soon after labor.

Injuries to the pelvic portion of the ureters are not infrequent. Long, dry, tedious labors, the presence of disproportion, poor retraction and operative interference predispose to these injuries. Involvement of the ureter in inflammatory exudates is sometimes seen. The older gynecologists described the pathology and symptomatology of this condition in detail. Tenderness over the ureter, and temperature falling with the appearance of pus and blood in the urine, are the common findings of importance. Catharsis, bladder

9. Walker, George: Apparatus to Aid in Differentiation Between an Obstruction in the Urinary Outlet and Paralysis of the Bladder, J. A. M. A. **77**: 286 (July 23) 1921.
10. Curtis, A. H.: Am. J. Obst. **78**: 230 (Aug.) 1918.
11. Barnes, A.: Lancet, 1875, pp. 127, 165, 372, 455.
12. Chamberlain, M.: Am. J. Obst. **10**: 177, 1877.
13. Dudley: Text-Book of Gynecology, Philadelphia, 1898.
14. Sampson and Hennes: Bull. Johns Hopkins Hosp. **15**: 156, 1904.

irrigations and forced fluids are indicated in the medical treatment. If drainage of the kidney pelvis by catheterization seems advisable, it should be done by an expert, bearing in mind the possibility of perforation.

Pyelitis or pyelonephritis as a complication of the puerperium is closely associated with the presence of a residual urine and the possibilities of poor kidney drainage. The infection at this time is frequently more active and persistent than when occurring in midpregnancy. Patients suffering from pyelitis at some time previous to labor may light up the infection in the puerperium.[15] Wallich [15] advises frequent catheterization for the woman who is delivered during an acute attack of pyelitis, the idea being to keep the infected urine off the vulva. Smith [16] found the colon bacillus in twenty-two out of twenty-three postpartum urinary infections. Forced fluids, milk diet, free catharsis, the bland oils and alkalization or acidification of the urine, according to the type of infecting organism, are indicated. Drainage of the kidney pelvis may be necessary.

One should be on guard against urethrocele, cystocele, rectocele and prolapse after labors when there is any possibility that the bladder attachments or the tissues of the musculomembranous diaphragm about the cervix have been injured. Immediate repair of the perineal and other ascertainable injuries should be done after labor. These patients should not be allowed to return to active life as soon as the normal parturient. They must be taught to keep the bladder and rectum empty, thus preventing overstretching of the weakened tissues. Detailed instructions are given as to the daily use of long, hot vaginal douches, which aid in restoring tissue tone. Frequently a pessary, worn for a short time, will prevent permanent trouble. When successful repair of the bladder supports or fistula has been performed with difficulty, cesarean section is without doubt justified in subsequent pregnancy. We believe that recent years have shown a diminution in the amount of damage done to the bladder and pelvic tissues during labor. When forceps and extraction have not been employed without regard to the condition of the cervix and the soft parts, follow-up work reveals very little serious damage to the bladder and its supports. In no part of our obstetric practice will a little care, patience and personal attention be more richly rewarded than in the consideration of the bladder complications.

ABSTRACT OF DISCUSSION

DR. ARTHUR H. CURTIS, Chicago: The cardinal principle which underlies the care of the healthy bladder should be the avoidance of residual stagnant urine. This is not only true of the bladder during labor and the puerperium, but is doubly more important after operation on the pelvic organs. In my experience, one of the most important causes of the pyelitis of pregnancy is ascending infection from stagnant bladder urine. I am convinced also that passage of the catheter has been unjustly blamed as the cause of so-called postoperative catheter cystitis, whereas the condition is really due to ascending infection from stagnant bladder urine. We have established this rule: If it is necessary to catheterize a patient several times, because of inability to empty the bladder, a catheter is passed once each day to relieve the bladder of the residual urine. Ordinarily, before the catheter is withdrawn, we instil a small amount of weak silver nitrate solution; we also give a urinary antiseptic by mouth. The point I wish to emphasize particularly is that it is the stagnant residual urine that causes the trouble. Formerly we used the procedure in common practice—that of passing the catheter when the patient had distress; and, as soon as she developed the power of spontaneous micturition, we discontinued the use of the catheter. Here is the great mistake. It is not the passage of the catheter but it is discontinuing the use of the catheter before the patient can learn completely to empty the bladder which causes the trouble. Formerly, one out of every fifteen or twenty patients came back after operation with urinary tract infection. After establishing the simple procedure of avoiding residual urine in all patients whom it has been necessary to catheterize repeatedly, we absolutely rid our service of these urinary tract infections. I have recently gone over the histories, and in more than a thousand cases there has been almost complete freedom from urinary tract infection.

DR. JOHN GARDINER, Toledo, Ohio: Yesterday Dr. Neel stressed the fact that actual fascial flaps must be dissected loose and free to get the proper support for the repair of cystocele. And Dr. Spalding brought out, as a pertinent point, the result of excessive dilation of the fascial support of the uterus, and called attention, by way of a warning, to the injudicious use of the Voorhees bag, which, by dilating and stretching, may tear the unstretched fascia supporting the uterus. And further, Dr. Ward clearly pointed out the result of laceration of the posterior pelvic support which, after being torn, allows an insidious falling of the posterior culdesac and a hernia follows. These are very important points in the consideration of the pelvic fascia. From the obstetric standpoint, there is the fetal ovoid about 10 cm. in diameter and about 30 cm. long. Not only is there a dilatation but also a progressive grinding downward and expulsion of the ovoid through the birth canal. This muscular canal can be dilated at most about 3 cm. in the nonparous woman. During labor it must withstand the insult of a sphere 10 cm. in diameter which is being driven down through it and at the same time being forced to accommodate itself to the irregular protuberances of the glove fitting bony birth canal. Thus we have the mechanics of labor. The bladder is bound to suffer more or less. I have been greatly interested in the condition of the bladder, and some years ago worked out to my own satisfaction the point that the bladder and its supports were prone to be injured. I used a rubber bag as a bladder, oiled it and oiled a fetus and arranged the parts as in labor. As pressure was exerted on the bag, partially distended, it would rise up, and as the pressure increased the lower part of the bag was pulled up. When the bag was empty, it was pushed down as the fetus descended. I found, clinically, that there is another factor involved in the safety of the bladder. A great deal depends on the formation of the symphysis pubis. If the symphysis is an acute angle, the bladder usually ascends easily and is unharmed; if the symphysis is flat, it is very ominous for the bladder; if it is even convex, the bladder and urethra seemed at times to slip aside and be more or less protected. I concluded from these facts that the analogy is the same during labor if the bladder is partly distended. We are immediately befuddled when we are trying to bring the surgical technic in its entirety over into the obstetric technic. The advice in abdominal work that patients must be catheterized is absolutely good. In labor, however, a different condition is being dealt with. I am not making a plea that there be a distended bladder during delivery, but I would prefer that there be a full bladder rather than an entirely empty one during labor. Many women are delivered, and no one has any idea as to the condition of the bladder, and no bad results have occurred. If there is a distention that interferes with labor, some of the urine must be withdrawn; but by leaving some urine in the bladder, I feel that there will be less injury to the bladder and its supports. However, I believe that the flat, smooth symphysis is a malformation, and the bladder and its supports during labor are in a very disadvantageous position.

DR. H. W. SHUTTER, Milwaukee: I cannot agree with Dr. Gardiner in leaving a small amount of urine in the bladder

15. Wallich, V.: Pyelonephritis en suites de couches, thesis, Paris, 1904.
16. Smith, F. H.: Urinary Infections of Pregnancy and the Puerperium, Am. J. M. Sc. 155: 127, 1918.

during delivery. I cannot see its advantage; and, as most of us are unable to tell within several ounces just how much urine a bladder contains, there is a distinct possibility of harm. Lack of time prevented my reading that portion of the paper considering the traumatic lesions of the bladder supports. There are a number of measures that can be instituted soon after labor when the bladder has been torn loose from its attachments or when we anticipate rectocele. Good care in the few weeks following delivery makes these accidents to a considerable extent preventable. Overstretching of the supporting structures is prevented by keeping the bladder empty and the routine use of daily enemas. Long hot douches taken daily help these women restore tone to the pelvic tissues. Dr. Curtis told me that every case of pyelitis complicating pregnancy that has come under his observation shows a residual urine on catheterization after voiding. This coincides with the finding of the colon bacillus in twenty-two out of twenty-three cases of urinary infection in pregnancy reported by Dr. F. H. Smith. In other words, urinary infection is a matter of stasis and residual urine in virtually all these cases.

PRIMARY CLOSURE OF WOUND WITHOUT DRAINAGE IN USUAL COMPOUND FRACTURE OF LEG *

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The most common site of compound fracture is the leg, because of the unusually scanty covering of the fragments. The ideal treatment is that which prevents suppuration and converts the compound into a simple fracture. This has been accomplished rarely in civil life under favorable circumstances and occasionally, during the recent war, under most difficult conditions. These successful results were due partly to good treatment but chiefly to the particular nature of the causal accident or injury. In civil life, with which alone I am concerned, there is a marked difference in the prognosis of a case in which the fracture has been made compound by the protrusion through the skin of the sharp end of a tibial fragment and one in which a heavy, contaminated object has produced the fracture and the wound over it, thus devitalizing the neighboring soft tissues and carrying into the wound dirt and other foreign bodies. Therefore, the classification of the compound fractures into those due to indirect and those due to direct violence is a very important one. In my opinion, the most important question connected with compound fractures is, To which of these two varieties does each case belong? There seems to be little tendency to make this distinction, probably because of the difficulty in doing so; and the reference to it is only occasional. It would seem that because we cannot establish the occurrence of the more benign indirect violence with penetration of the skin by the clean fragment, we assume the opposite conditions, that is, direct violence with more or less consequent devitalization of the soft tissues and the carrying of infection into the wound. As a consequence the treatment of the great majority of cases is assumed to require free drainage. I have assumed the contrary cause to be operative in the usual case.

The most important evidence that the skin wound is produced by the protrusion of a fragment is its small size in almost every instance. Sometimes it is very small because it is made by the pointed end of a sharp fragment and very rarely is it larger than could be accounted for by the protrusion of the entire transverse surface of the shaft of the bone. If the wound were usually the result of the impact of some outside object, it would vary in size much more than it does, that is, we should more frequently find larger wounds with more irregularly lacerated margins, contused skin and subcutaneous tissues and abrasions of the adjacent skin surfaces. What directed my attention particularly to the size of the wounds was a previously conceived theory concerning the mechanism of most fractures and dislocations.

In 1919, I [1] offered the theory that most fractures and dislocations, which occur frequently in man, a biped, and rarely in quadripeds, are due to the ordinary fall which is common in man because he is a biped and rare in the quadrupeds. Reasons were also offered for assuming that the fall on the hand was responsible for nearly all fractures and dislocations of the upper extremity and for the typical deformities characteristic of them. Without attempting to follow out the exact mechanisms of them, I have, for some years, been assuming that in the lower extremity most fractures and dislocations are the result of indirect violence from a fall and that consequently most compound fractures are probably made compound by the protrusion of the fragment through the skin and not by the direct impact of some outside injuring object. This would account for the usual small size of the wound, the usual absence of contusion of the soft tissues about the wound and abrasions of the adjacent skin surfaces. Even when the history shows clearly that the compound fracture was due to the fall of a heavy object on the leg, one cannot say that the fracture and the skin wound over it were caused by the direct impact of this object. It is quite as likely that the falling object struck the leg at some point distant from the site of the resulting fracture and skin wound and that consequently these were due to an indirect application of the force with protrusion of the fragment and a clean wound.

It will, of course, be apparent that if indirect violence and protrusion of the fragment produce the compound fracture, the only sources of infection to be considered are those resulting from contact of the protruding fragment and the surfaces of the wound with adjacent objects, such as clothing and soil. The size of the wound cavity will be dependent on the extent of the separation of the two or more fragments from the adjacent tissues by the fracturing force which not only broke the bone or bones but also separated them from one another to a greater or lesser degree, according to the amount of force applied. The inference here is that while the cavity may be a large one it is clean for the most part and its walls have suffered little devitalization.

TREATMENT

Two therapeutic requirements present themselves: (1) restoration and maintenance of the normal relations of the fragments to one another, and (2) the combating of any infection which has gained admission to the wound and the prevention of the introduction of any more. To meet the first, I have employed the operative method with direct fixation of the fragments and one nonoperative method, the extension cast. To meet the second requirement, I have provided as

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

1. Thomas, T. T.: Ann. Surg. **70**: 359 (Sept.) 1919.

thorough asepsis as possible to prevent the admission of new infection and direct application to the wound of tincture of iodin, with or without neutralization by alcohol and with and without the addition of the application of dichloramin-T to combat any infection introduced through the wound. I have recently[2] fully described and illustrated the extension cast employed. This cannot be done satisfactorily here because of lack of space. The purpose now is not so much to attempt to establish exact methods of treatment as to suggest possible lines of progress toward the ideal method of treating compound fractures in general, the conversion of them into simple fractures by immediate closure of the wounds without infection.

A previously entertained impression, now strengthened by experience, is that the more absolute the immediate immobilization of the fragments the better the chances of avoiding infection; indeed, too much mobility of the fragments seems capable of causing a discharge which will not behave as does ordinary pus. I believe that the direct fixation of the fragments by operative means, for this reason, is better than the indirect fixation by the nonoperative methods, although this was not so definitely established as one could wish. The technic of the treatment of the wound will vary with the method of fixation of the fragments. For the operative method, it is essentially the same, regardless of the particular fixation apparatus used. I employed plates and screws, screws alone and nails. With the extension cast, the fixation is applied at one sitting and the position of the fragments does not change after the cleansing of the wound. Continuous traction with gradual correction of the deformity was not employed in any of these cases.

When the extension cast is to be used, the wound is temporarily covered by sterile gauze and a bandage. Under a general anesthetic, the extension and fixation may be applied without covering by plaster the portion of the leg containing the wound. After removal of the temporary dressings, the surgeon, gowned, gloved and masked as for the usual aseptic operation, prepares the wound area. The limb, which has been previously shaved, is cleansed with a sterile gauze sponge in a hemostat, while an assistant pours on ether. Then the parts are draped with sterile sheets and towels, and the wound and surrounding skin are painted with tincture of iodin, which is washed off with alcohol. Then with a sterile sponge in a hemostat, tincture of iodin is carried to all parts of the interior of the wound. In some cases, the excess of iodin was neutralized with alcohol and in some not. Usually, one or more sutures are employed to close a gaping wound loosely, that is, with spaces between the sutures wide enough to permit free escape of wound secretions into the gauze dressings. After the first few cases treated in this way, the cast was then made to cover the whole limb, including the wound.

When operation and direct fixation of the fragments are resorted to, the patient is given a general anesthetic, usually ether, and the limb is prepared carefully with ether, iodin and alcohol, as in the nonoperative method, the skin having been previously shaved. After the draping of the field of operation with sterile sheets and towels, the surgeon swabs out the entire inside of the wound with tincture of iodin. It will probably prove to be best to neutralize the excess of iodin with alcohol. The wound is then enlarged to permit better access to the fragments, which are then approximated with as little disturbance of their attachments to the surrounding structures as possible. The idea is to reach the fragments, adjust them and provide firm fixation as quickly as possible. In most cases, the necessity of promptness in this treatment has prevented the taking of a preliminary roentgenogram, and this has necessitated more exposure of the fragments for the accurate placing of screws or nails across the line of fracture and through both fragments. These were employed with the idea of diminishing the amount of foreign body in the wound. The determination of the best mode of fixation of the fragments is a question that needs more attention. By this time the iodin has largely disappeared from the wound so that I have, in some cases, before closing the wound, filled it with dichloramin-T. In all except Case 3, drainage of the wound was avoided. The tendency has been to use chromic gut No. 2, interrupted sutures, and to leave free spaces between them so that wound secretions can escape easily into the dressings. Sterile gauze wet with alcohol is applied to the wound and this is reinforced by a considerable thickness of dry gauze and the limb is encased in a plaster cast, extending usually to the middle of the thigh.

2. Thomas, T. T.: S. Clinics N. America 1: 207 (Feb.) 1921.

REPORT OF CASES

The cases reported herewith illustrate various phases of compound fractures of the leg and of the results of treatment described above. In all, only the tibial fracture seemed to be compound and the small size of the skin wound indicated that it was due to penetration by the tibial fragment. The treatment of the wound as outlined above for the extension cast method and for the method by direct fixation with plates, screws, Parham-Martin bands, etc., will not be repeated for each case.

CASE 1.—An iceman, aged 43, a free user of alcohol, while at work in a stable, Dec. 26, 1918, was struck on the back of the neck by a bale of hay which fell from the floor above. He sustained a fracture of both bones of the left leg, a tibial fragment protruding through the skin. The bleeding was not severe. He exhibited a heaving impulse over the precordium and a faintly palpable thrill at the cardiac apex, which was displaced downward to the sixth interspace. There was moderate cardiac enlargement and pulsation of the superficial vessels of the neck. He had a soft double murmur, heard best over the aortic area, radiating down to the sternum and not transmitted to the vessels of the neck.

He was admitted to the university hospital soon after the accident. The upper tibial fragment was protruding from the wound. The foot and both lower fragments were displaced backward and outward. The intern cleansed the wound with tincture of iodin and alcohol and applied a sterile dressing. On the same day, an extension cast was applied and the wound and surrounding skin were treated by the technic outlined above. The wound was then enlarged, the protruding fragment released and reduced, the pull of the extension cast permitting a good approximation of the fragments. The wound was closed by sutures without drainage and was dressed aseptically. It was not covered by the plaster cast as in later cases. Healing occurred without infection. The cast was removed, Jan. 15, 1919, and an ordinary one applied. The second cast became loose and a third one was applied, February 8. Two days later, he was discharged. In about eight weeks after the accident, the third cast was removed and the patient used crutches. He returned to his work about the middle of April; but he had worked only a few weeks, when heart trouble compelled him to give up again. He then remained in bed until he died in July, 1918.

CASE 2.—A stone mason, aged 34, Dec. 28, 1918, sustained a compound comminuted fracture about the middle of the leg,

when a large stone, weighing in his judgment about a ton, fell on his left leg. His reputation for honesty and skill as a workman was such that he was probably telling the truth. The upper part of the leg and the lower part of the thigh showed considerable contusion and abrasion. He was brought immediately to the Northeastern Hospital, where a wound was found in the skin of the inner side of the leg, just back of the tibia, at about the junction of the lower and middle thirds, or about 4 inches (10 cm.) below the site of fracture of the tibia. This indicated that the upper fragment had descended that far and had produced the skin wound which was about 1½ inches (4 cm.) long. An extension cast was applied the same afternoon and the wound was treated by the technic described above. The wound was found to be very extensive when the sterile gauze pad saturated with tincture of iodin was carried to all its parts, indicating that the tibial fragments had been extensively stripped from their attached muscles by the force producing the fracture. The roentgenogram taken afterward showed excellent position of the fragments.

As in the preceding case, the wound area was not covered by the cast. Jan. 21, 1919, a new cast was applied, the wound having healed without infection, and, February 1, the patient was discharged. He was readmitted, February 25, on account of poor union of the fracture which was plated on the following day. He was again discharged in a cast in two weeks with an open wound and returned, April 14, for removal of the plate and two pieces of dead bone. The union was not solid and, May 22, he began to wear a walking brace. He seemed to have developed solid union about July 1, but continued to wear the brace until about the middle of the following November. He had begun to work as a stone mason, September 1, and has continued to do so ever since, earning his full wages from the beginning. He now has one-half inch (1.2 cm.) shortening in the affected leg, with slight external bowing but excellent function.

CASE 3.—A Lithuanian laborer, aged 48, April 1, 1919, sustained a compound fracture at the junction of the lower and middle thirds when a heavy load of steel rods fell onto his right leg. He lost much blood and was brought to the Northeastern Hospital immediately after the accident, where open reduction was performed within a few hours, with essentially the technic described above. This was the first case of this group in which the open method was adopted and a rubber drainage tube was employed. A plaster cast was applied with a hole cut in it over the wound, to enable the wound to be dressed. Within a few days the edges of the wound separated slightly, exposing the plate to view. Slight infection of the wound followed. The tube, plate and screws were removed at the end of two weeks and a new cast was applied with an opening in it for drainage. The patient was put on crutches with the idea that better drainage from the upright position would be worth while. He was discharged a few days later, with the request that he return to the dispensary for further dressings. The thought was entertained that because of the benign character of the wound, which discharged slightly, going about in the open air would influence favorably the healing of the wound and would bring about earlier bony union. This did not meet with the patient's approval and he gained admission to another hospital, May 13.

The evidence appears to show that expectant treatment was followed, that is, new and larger openings were provided and the limb was kept continuously in a cast, a new one being applied from time to time. During his stay in the hospital and afterward he says that eleven pieces of bone were removed from the wounds. He remained in the hospital until Nov. 13, 1919. The wound has since broken open a few times, usually with the extrusion of a piece of bone, the last time in June, 1921. He returned to his usual work in May, 1920, and has been able to perform such work continuously since, except when there was no work for him. He has now (April 1, 1922) three-fourths inch (2 cm.) shortening; the bone is somewhat thickened about the fracture area; the bony union and motion at the ankle are excellent, and so far as he can judge the leg is as good as it ever was.

CASE 4.—A boy, aged 14, was knocked down by an automobile, July 4, 1919, the wheels passing over both legs and breaking both bones in each leg. The fracture was compound in the left leg. The patient was brought promptly to the Northeastern Hospital. Dr. John A. Broadfield was called immediately and began to operate on the compound fracture very soon afterward. There was some comminution and considerable displacement of the fragments; but by traction and manipulation, they were placed in excellent position and fixed by a plate and six screws. The wound was swabbed out first with tincture of iodin and later in the operation with dichloramin-T. It was closed without drainage except for free spaces between the skin sutures. A plaster cast was applied. The fracture of the right leg was treated in a fracture box, the deformity being slight. July 8, a window was cut in the cast and the wound inspected. A dark brown secretion was exuding, but evidence of infection was slight. July 18, the wound was partly open and the plate was visible, a creamy pus escaping. The temperature rose to 100.4 F. on the day following operation, subsided to normal in about ten days and remained about normal afterward. The pulse did not rise above 110 after the day of operation, on which it reached 150. September 12, a new cast was applied with an opening for drainage of the wound. The patient was discharged from the hospital, September 24. December 8, he was readmitted for removal of a small sequestrum and curettage of the bone in the fracture area and was discharged three days later. The cast was removed, March 15, 1920. He began to walk first with crutches and later with a cane. The wound was completely healed about the middle of June, 1920. Strong bony union developed, with slight external bowing of the leg, due to a softer union in the early weight-bearing stage. So far as he can judge, this limb is now (March 15, 1922) as good as the other; but there is a shortening of one-half inch (1.2 cm.), with perfect motion in the ankle and knee and apparently perfect strength in the leg.

CASE 5.—A motor truck chauffeur, aged 22, sustained a compound comminuted fracture of the tibia and a fracture of the fibula when one wheel of a motor truck passed over his left leg. He was brought promptly to the university hospital where an intern found a wound in the skin about the size of a half dollar, through which the end of the tibial fragment could be seen. There was free bleeding from the wound. The intern cleansed the surrounding skin with tincture of green soap and alcohol, cleansed the wound and packed it with sterile gauze wet with dichloramin-T because of the hemorrhage. On the same day I applied an extension cast and treated the wound with the technic described above for the extension cast cases. It was observed at this time that the extension exerted on the leg by the cast rendered the skin over a considerable area of the front of the leg pale. It was thought at the time that this was only a temporary disturbance of the circulation which would disappear later, especially as a similar effect had been noticed in previous cases of simple fracture of the leg with no later untoward effect. December 2, the wound showed evidence of infection and on the following day a small quantity of pus was evacuated and the Carrel-Dakin technic instituted. December 3, the skin over the front of the leg in the area made pale by the extension, about the size of the palm of the hand, showed evidence of necrosis. From this time on it was necessary to care for an increasingly suppurating wound, associated with the sloughing surface tissues. Jan. 10, 1920, the extension cast was removed and a fracture box was substituted, the loss of the extension becoming evident in a recurrence of the deformity of the fragments. January 13, under ether and with a liberal use of tincture of iodin, two Parham-Martin bands were applied, which held the fragments in accurate apposition so that the fracture box could still be employed. About five weeks later a posterior splint was substituted for the fracture box, which permitted better care of the discharge. February 10, the Carrel tubes were dispensed with and on the following day he was put in a wheel chair. March 17, since we believed that the fragments would now maintain their good position without their support, we

removed the bands from the fragments, together with a loose piece of bone. However, the foot and the lower fragments from their own weight slowly turned inward, causing a slight varus deformity. April 7, the patient was sent home on crutches, where the rather large granulating surface was to be treated by his family physician. In September a walking brace was applied, which enabled him to walk about without the support of a cane, and about a month later he went to work in a machine shop on a drill press. About Jan. 1, 1921, he again gave up work and did not try again until about the middle of the following September, when he went back to his old work as a motor truck chauffeur. He has been able to do this kind of work since except for the idleness enforced by the following operation. March 7, 1922, in the university hospital, I performed a skin graft operation on the unhealed granulating, wound surface, which was about the size of the palm, with much success. April 27, there remained three unhealed irregular spots, each approximately a half inch (1.2 cm.) in diameter. There was no shortening, about a half inch (1.2 cm.) elevation of the heel, slight varus position of the foot and about half of the normal motion of the ankle.

CASE 6.—A blacksmith, aged 61, slipped on the ice, Feb. 8, 1920. He was brought immediately to the university hospital where he was found to have a fracture of both bones of the left leg at the junction of the lower and middle thirds, that of the tibia being compound. On the same day an extension cast was applied and the wound treated as outlined above. A roentgenogram taken afterward showed the fragments in excellent position. February 19, the leg was movable in the cast, which did not cover the wounded portion of the leg. The cast was then made to cover the whole leg, a small hole being cut in it over the wound for purposes of dressing. February 25, it was discharging a small quantity of pus. Dichloramin-T dressings were applied. April 20, the cast was removed. There was union of the fracture. The pus had, however, slowly increased and burrowed to the region of the ankle. Under gas anesthesia better drainage was afforded at the original opening and at the ankle. June 3 he was discharged to return to the surgical dispensary for dressings of the wound. He reported that after two visits the wounds closed and he returned to work. He gave up again in a few days on account of a perineal abscess. I did not see him after he left the dispensary until March 20, 1922. In July, 1920, he was admitted to another hospital, where better drainage was provided and where he remained for four or five months. He has not worked since but he intends to return to work very soon. March 20, 1922, there was no sinus, he had about a half inch (1.2 cm.) shortening, considerable limitation of motion at the ankle and slight elevation of the heel from shortening of the Achilles tendon.

CASE 7.—A girl, aged 15, was admitted to the university hospital, Aug. 8, 1920, with a compound fracture of the left leg. With the technic described above, an open reduction was performed after the wound had been enlarged and the fragments accurately approximated and fixed by driving two long nails through both, across the line of fracture, which was somewhat oblique. The wound was closed without drainage, a sterile dressing applied and the limb, including the wound, was completely covered by a plaster cast, extending from above the knee to, and including, the foot. No infection developed. She was discharged, August 18, to return later for the removal of the cast.

She did not return but was attended at home by her physician, Dr. William B. Ewing, who split and removed the cast at the end of seven weeks, reapplying it and keeping it on until three months after the fracture occurred. When the cast was first removed, the gauze covering the wound was moist with a dark serum. The end of one nail, which appeared at a small opening, was removed. Union of the fracture was not firm until the end of three months, when the sinus was closed. April 30, 1922, I found one-half inch (1.2 cm.) shortening; with a very slight posterior bowing at the seat of fracture, shown by the roentgen ray. The mother and the patient said that her friends could not tell from the appearance which limb had been fractured, while the function of the limb was perfect.

CASE 8.—A boy, aged 15, Dec. 7, 1920, was kicked in the right leg by a horse, a compound fracture of the tibia and a fracture of the fibula resulting. He was brought at once to the university hospital and an open reduction and fixation of the tibial fragments by three nails was performed on the same day, with the technic described above. The wound and dressing were enclosed completely by a plaster cast from above the knee to, and including, the foot. No infection resulted. He was discharged, December 21, and returned four weeks later to have the cast removed. He used crutches or a cane for a month more before beginning to bear weight on the fractured leg. He returned to the hospital, Aug. 15, 1921, with a small discharging sinus over the seat of fracture. The bone was exposed and this sinus was found to come from a loose nail, which was removed. The other two nails were so covered by bone that they could not be found easily and were not removed. The wound was swabbed with tincture of iodin and closed without drainage, and it healed without infection. He was seen, March 19, 1922, at which time there were perfect shape and function of the limb, with no shortening.

CASE 9.—A man, aged 65, spare but in good health for his age, who lived largely an outdoor life, May 5, 1921, was thrown from a railroad "work car," sustaining a compound fracture of the left leg in the lower third. He was brought to the university hospital on the same day, and in the receiving ward the leg was cleansed and a sterile dressing applied by an intern. The upper fragment had become engaged in the skin after penetrating it and had carried this skin back into the wound underneath. On the day of admission, an extension cast was applied by the technic referred to above. It was necessary to make a longitudinal incision, about 2 inches (5 cm.) long in order to release and reduce the engaged end of the protruding fragment. Under the traction exerted by the extension cast and with a little direct pressure on them, the fragments were well approximated. The wound was closed by chromic gut sutures without drainage and completely enclosed in a plaster cast from above the knee to, and including, the foot. The after-course in this case was especially interesting. The temperature and pulse seemed to indicate that no infection had taken place; but soon after operation, the patient began to complain of much pain about the seat of fracture, so that it became necessary to give him morphin for relief. May 20, fifteen days after the fracture and its reduction, the cast was removed in order that the cause of the pain might be discovered. The removal necessitated the administration of gas-ether anesthesia. The sutured wound margins had separated about three-fourths inch (2 cm.), at the widest part, and the upper fragment could be seen. The external margin of the wound had undergone some necrosis and the gauze covering the wound had become wet through with a discharge resembling pus. The wound cavity was cleansed thoroughly with sterile gauze sponges, swabbed with tincture of iodin and then alcohol, and a sterile gauze dressing, wet with dichloramin-T, was applied. This was fixed by a bandage. The fragments, from the loss of the special cast extension, had lost their good approximation and overlapped somewhat. They were straightened as much as possible and a new cast was applied from above the knee to, and including, the foot, covering the wound and dressing completely. June 7, four weeks later, it was noted that there had been no evidence of infection shown by temperature, pulse or general condition, but that for the preceding few days there had been some pain at the seat of fracture, with a slight rise in temperature which otherwise would not have been considered important. On this day an opening was made in the cast and the wound exposed. It was distinctly smaller and cleaner than four weeks before. A new sterile gauze dressing saturated with dichloramin-T was applied and held firmly in position by adhesive plaster strips, applied over the cast opening.

The patient was discharged, July 15, without any inspection of the wound since the last dressing four weeks before, there having developed no signs of infection in the meantime. After twenty days more, August 4, he was brought back to the hospital and the cast and dressing were removed, a very

interesting condition being disclosed. When the first cast was removed and the free discharge was found in the wound, in addition to the absence of constitutional signs of infection there were no local signs, other than the discharge, that is, no redness, tenderness, edema or any appreciable thickening of the tissues. Eight weeks later, without any attempt at drainage, the puslike material had entirely disappeared and the wound, so far as gross appearances were concerned, was perfectly clean. The granulations, apparently from the bone, had so grown into the meshes of the gauze that the latter could be removed only by tearing away these granulations, leaving a freely bleeding surface. There was good bony union. This surface cicatrized without difficulty soon afterward. December 28, it was noted that he was walking with a limp and was using a cane which he expected soon to dispose of. He returned to office work, March 1, 1922. The roentgen ray revealed posterior angulation at the seat of fracture, and he still had some elevation of the heel from contraction of the Achilles tendon. With a thickening of the heel of the shoe, he walks very well without support and has returned to his work in the woods as a tree inspector.

CASE 10.—A colored man, aged 38, Sept. 14, 1921, was knocked down by an automobile, sustaining a compound fracture of the left leg in the lower third. He was brought immediately to the university hospital and operated on a few hours later, the technic described above being employed. The wound was about 2 inches (5 cm.) long and almost transverse. It was enlarged longitudinally to about 3½ inches (9 cm.) in this direction after the whole wound had been swabbed out with tincture of iodin. The fragments were then approximated and fixed by an ordinary wood screw passed obliquely across the line of fracture through both. The wound was then closed completely, a sterile gauze dressing wet with alcohol being applied as well as a plaster cast extending from above the knee to, and including, the foot. No infection followed. He was discharged, September 27, walking on crutches. Following a suggestion of another surgeon on this day, the cast below the ankle was removed and two "stilt" like pieces of wood splint were applied, one on each side of the cast, and made to project below the foot. These were incorporated in the cast by additional rolls of plaster-of-Paris bandages, the object being to furnish an ambulatory cast and allow free movement of the ankle. On the following day, I permitted him to walk on this "stilt" cast. November 15, about nine weeks after the operation and accident, this cast was removed and a small discharging sinus was discovered over the fracture. This had been covered completely for seven weeks by the cast without giving any detectable signs of infection, constitutionally or locally, the patient repeatedly having stated that he experienced neither pain nor discomfort in this region. The gauze covering the wound was somewhat thicker than the hand and considerably longer and wider. It was slightly moist over an area about the size of the palm, excluding the fingers, with what looked more like dark blood than pus, that had escaped from the very small sinus. There were no local signs of inflammation in the surrounding skin or deeper tissues. After cleansing the sinus opening and skin about it with tincture of iodin and alcohol, a sterile gauze dressing moistened with dichloramin-T, and another cast like the preceding one but including the foot and without the "stilts," were applied. A week later he was advised to walk on the cast, the idea being to take advantage of weight bearing for its possible influence in favoring the development of bony union. Jan. 3, 1922, after walking on it for fifty-one days, during which neither the wound nor the sinus was exposed, the cast was removed. The sinus was still discharging and bony union had not occurred. There had been no local or constitutional signs of infection at any time except the discharge. January 10, the screw was removed and the bone curetted at the site of the sinus and screw. The wound was then swabbed out with tincture of iodin and completely closed with catgut sutures without drainage. Another cast extending from above the knee to, and including, the foot was applied. Since no signs of infection developed, this cast was not removed until February 28, seven weeks after it had been applied. There was now no evidence of a sinus, the wound having healed completely; but there was still motion at the seat of fracture: The use of a walking brace was ordered and he began to walk on it, March 17.

CASE 11.—A farmer, aged 26, Oct. 8, 1921, was knocked down by an automobile. He was taken immediately to a neighboring private hospital where he was found to have a compound fracture of the leg with a small wound in the skin, at about the junction of the middle and lower thirds of the leg. Dr. Samuel Bruck was called from Philadelphia on the following day and had the patient transferred to the Northeastern Hospital of Philadelphia, about thirty-six hours after the accident, and I saw him soon afterward. The roentgenogram taken by Dr. Bruck revealed a comminuted fracture of the tibia and a fracture of the fibula, the tibial fracture being compound. An extension cast was applied at once with excellent reduction of the considerable displacement, and the wound was treated by the technic described above. No infection resulted. The cast was removed, October 27, when the wound was healed completely. A new cast was applied without including the foot, and side splints were so encased in the cast that they projected below the foot like stilts, the object being to permit walking on the cast with freedom of movement at the ankle. October 21, the patient was discharged to walk on crutches; but a week later he was permitted to walk on the "stilt" cast without crutches. Finding that the stilt cast in Case 10 had resulted in the formation of a sinus and delayed union, November 20, it was removed from this patient and a new cast was applied from the middle of the thigh to, and including, the foot. Soon afterward he was permitted to walk on this cast without crutches. Jan. 10, 1922, he had been walking on this cast about six weeks when it was removed and firm bony union was found at the site of fracture. January 26 he could walk very well except for an exaggeration in the foot of the fractured limb of a normal tendency to flatfoot, due to a slight abduction of the lower fragments at the seat of fracture. He had normal motion in the affected ankle and a shortening of this limb of one-half inch (1.2 cm.). He could then do much, but not all, of his farm work.

CASE 12.—A boy, aged 16, Oct. 29, 1921, was working as a huckster when a horse fell on him. He sustained a compound fracture of the right leg, which was caught under the horse. There was a wound about an inch and a half (4 cm.) long on the medial side of the leg, about 6 inches (15 cm.) above the ankle joint, the tibia being broken a few inches higher and the fibula at about the same level. There was about an inch (2.5 cm.) shortening of the limb. He was brought immediately to the Northeastern Hospital; and a few hours later a longitudinal incision, about 6 inches (15 cm.) long, was made over the front of the tibia, not including the wound, which made the fracture compound, with the technic described above. The fragments were approximated and fixed by two screws, passed obliquely through both fragments across the line of fracture. The wound was closed completely, and a sterile gauze dressing wet with alcohol was applied over it, the limb being completely enclosed in a cast from the toes to the middle of the thigh. No infection followed. He was discharged from the hospital, November 22, walking on crutches. The cast was removed eight weeks after the accident and he could walk without crutches soon afterward. He had not worked since the accident because he could get no work to do; but he says he was able to work a few weeks after the cast was removed. April 16, 1922, he had no shortening, the leg was perfectly normal in shape and length, except for slight thickening of the bone about the fracture area and he had perfectly normal function in the limb.

CASE 13.—A railroad brakeman, aged 39, Nov. 20, 1921, while shifting cars, was "sideswiped" by a passing car and thrown to the ground, his right leg especially being injured. It bled profusely and he arrested the hemorrhage partially by tying a handkerchief around the leg. A little later he was found by a fellow workman, who stopped the bleeding completely by tying the tourniquet tighter. He was brought immediately to the university hospital where he was attended

by the chief resident physician, Dr. Cook. The upper fragment was protruding through a skin wound. The leg of the underwear had also been penetrated and had been so entangled in the fragment that it had been carried into the wound and could be withdrawn only with considerable force. The surrounding skin was cleansed with tincture of green soap and a sterile dressing was applied without reducing the fragment into the wound. A Thomas splint, with a loop of bandage around the ankle for traction, was applied. Operation was performed about five hours after admission. The skin wound was situated over the antero-internal surface of the tibia and was from 2½ to 3 inches (6.5 to 7.5 cm.) long, its edges gaping an inch (2.5 cm.) or more in its widest part. With the technic described above the wound was enlarged to about 6 inches (15 cm.); the fragments were approximated and fixed by two screws passed obliquely through both fragments, the line of fracture being only slightly oblique. The wound was closed without drainage, a sterile dressing wet with alcohol and a cast extending from the middle of the thigh to, and including, the foot were applied. Since no signs of infection developed, the patient was discharged, December 3, walking on crutches. The cast was first removed and the wound exposed eight weeks later. There was some purulent discharge and odor. A granulating surface was found along the site of the incision, about 1½ inches (4 cm.) long and about three-fourths inch (2 cm.) wide, with a small sinus extending to the seat of fracture not large enough to admit an ordinary probe. This was laid open, and the loose screws removed. The surfaces of the sinus were curetted, including the granulating skin surface, and after covering the sutured wound edges with a sterile gauze dressing wet with dichloramin-T, they were all covered in completely by a plaster cast from above the knee to, and including, the foot. There being no constitutional or local signs of infection in the meantime, this cast was not removed for five weeks, March 14. The wound was again opened; the line of fracture well curetted and the wound kept wide open by gauze packing. There was not the slightest tendency toward burrowing of pus away from the line of fracture. A cast similar to the others was applied with a considerable opening over the wound for dressings. This cast was removed, May 2, and union seemed firm. The wound was almost healed and showed little discharge. Another cast was applied with an opening in it for dressing the wound. The limb seemed perfectly normal in shape, and measurement showed no shortening.

Case 14.—A huckster, aged 32, Jan. 5, 1922, as he stepped from a moving motor truck weighing about a ton and a half, slipped on the ice and fell, one back wheel of the truck passing over both legs. He was brought immediately to the university hospital. Both bones of each leg were fractured, the left in the upper third and the right a little below the middle. Lateral splints were applied to the former and a fracture box to the latter. On the following day, it was observed that the patient could not sleep on account of excessive pain, especially in the left leg and that the foot on this side was becoming cyanosed. A fracture box was substituted for the lateral splints on this leg and an extension cast was applied to the right leg which improved the positions of the fragments that had shown about a half end-on approximation. During the first week, the left leg and foot appeared to be becoming gangrenous; but in the succeeding days this condition ameliorated until the gangrene was limited finally to a few toes and the heel. January 22, the extension cast was removed from the right leg. The simple fracture had become infected and pus was exuding through a small skin opening over the tibial fracture, converting the simple into a compound fracture. The intern, Dr. H. W. Williams, gave it close attention and used the Carrel-Dakin technic. The infection gradually subsided and, February 9, a cast was applied with a hole for dressing the wound. The treatment arrested any tendency to burrowing of the pus, such as developed in Cases 3 and 6. February 23, the fracture area was curetted and several pieces of bone were removed, the wound being then packed with gauze. April 11, the fracture area was again exposed; three or four completely loose pieces of dead bone were removed and the overhanging cortical portions of bone on each side of the fracture were chiseled away so as to expose well the softened fracture line, except in the small portion where the bone surfaces had united. The whole wound was kept as wide open as possible to encourage drainage and healing by granulation.

COMMENT

In thirteen of the fourteen cases, the treatment was that outlined in the preliminary remarks. In six of these thirteen, the extension cast was employed and in seven the operative method, without extension, was used. In three of the extension cast cases, primary healing was obtained and in three secondary healing. In two of the seven operative cases, primary healing resulted and in five secondary healing.

The end-result in every finished case has been excellent, except for moderate internal rotary deformity of the lower fragments in Case 5. This patient was able to follow his old occupation as a motor truck chauffeur, although he has preferred other and lighter employment up to the present time. He did go back to the truck long enough to satisfy himself that he could do this work.

Although other phases deserve attention, the character of the healing with complete closure of the wound and covering it with a plaster cast is most interesting and most deserving of the space and time allotted to the subject. The cases in which primary healing was obtained need no further attention. This may be most advantageously restricted to those in which failure occurred. The outstanding feature of the remaining eight of the thirteen was the absence of the ordinary signs of infection, such as developed in Case 14, which was not compound to begin with. Even in Cases 3, 4, 5 and 6, pain, redness and edema were conspicuous by their mildness or absence. In Case 5, the greatest interest attaches to the effect of the extension, which immediately produced an anemia of the skin and was followed by necrosis of the corresponding area of skin and subcutaneous tissue and this by slow separation of the necrosed tissue and prolonged suppuration. But there was at no time severe or positive inflammation of the surrounding living tissue. In the midst of this suppuration, with a liberal use of tincture of iodin for disinfection, the Parham-Martin bands were applied and well tolerated for nine weeks. Some burrowing of pus occurred, but was by no means extensive.

The most interesting individual case was Case 9, the developments in which were responsible for the unusual course pursued in Cases 7, 10 and 13. Had they followed instead of preceded Case 9, Cases 3, 4 and 6 might have been treated as Cases 7, 10 and 13. There was no sequestration of bone nor any burrowing of pus in the latter three. My own feeling is that mobility at the seat of fracture was responsible for the sinuses in these and might readily have prevented primary healing in Cases 3, 4 and 6, although the drainage tube in Case 3 may have been responsible. I am inclined to attribute the delayed union largely to such mobility. The importance of it in the breaking down the wound technic after the open treatment of fractures has probably not been sufficiently appreciated. Muscle contraction very likely is capable of producing such mobility, even when the limb is immobilized in a plaster cast, extending far above and below the seat of fracture. In not a few cases of simple fracture of the shaft of the femur in which plating has been performed, a firm close cast, applied from the chest to, and includ-

ing, the foot, and primary healing obtained, the roentgen ray has later showed the plate lifted from the bone at one end and the screws obviously loose. In my opinion, the mobilizing effect of muscle contraction on the fragment ends is the most likely explanation of this condition.

Since the completion of this paper, I have operated on two patients with compound fracture of the middle of the humerus, using the tincture of iodin technic. The first was a woman, about 55 years old, who was knocked down in the street by an automobile, March 14. After one week's unsuccessful attempt by a physician to correct the deformity, during which time the wound was drained by a piece of rubber dam and a tube, I plated the fracture, March 21, introducing a drainage tube in the lower angle of the wound. The dressings were not changed for nine days, when the tube was removed and the wound redressed without drainage. All dressings and splints were removed finally at the end of six weeks and two days, when bony union seemed to be firm, as determined by palpation and the roentgen ray.

The second patient, a boy, aged 10 years, fell from a height of about 18 feet (5.5 meters), May 13, 1922. The fracture was plated on the following day and the dressing applied then has not been removed since. When I left home, March 21, seven days after operation, he was very comfortable and had not shown any signs indicating infection of the wound.

CONCLUSIONS

1. It is probable that most compound fractures of the leg are made compound by the protrusion of a fragment end through the skin, and that, consequently, the associated wound cavity is primarily free of infection, except for that introduced by contact of the usual small wound surface and the protruding fragment end with adjacent objects, such as soiled clothing, dirt and other foreign bodies.

2. The ordinary aseptic technic to prevent the introduction of more infection and the thorough swabbing out of the entire wound cavity to overcome the infection already present may be justifiably followed by complete closure of the wound without drainage.

3. Improvement in results should be sought chiefly in a method of perfectly immobilizing the exactly adjusted fragment ends. Success in finding such a method would materially increase the number of cases in which healing by primary union of the soft tissue wound and by primary union of the bone fragments occurs.

4. The final results in this group of thirteen cases are much better than could be expected without the early accurate adjustment of the fragments and the cleansing effect of the tincture of iodin.

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ABSTRACT OF DISCUSSION

DR. F. B. ST. JOHN, New York: As Dr. Thomas has said, the leg is the most common site of compound fracture. He further states that the ideal treatment is that which avoids suppuration and converts the compound into a simple fracture, and in this I heartily concur. I cannot quite agree that the most important question connected with compound fractures of the leg in general is to determine whether the wound and fracture are caused by direct or indirect violence. It would seem to me of equal importance to determine the extent of injury to skin, soft parts and bone, and the probable amount of contamination, whether it be due to an external object directly causing the injury, or to soil, clothing or skin; and by extent of injury is meant the amount of devitalization of bone fragments or soft parts. In the consideration of the type of compound fracture with which Dr. Thomas deals, we assume a relatively small wound made by the bone with the minimum amount of devitalization of bone fragments and soft parts, with, in the usual case, a relatively small amount of contamination; but it is not always the case in compound fractures of the leg caused by indirect violence, and this should be emphasized. Any rational form of treatment which adequately obtains and maintains reduction is desirable, and, in general, the simpler the fixation apparatus, the more desirable it is. The second principle, viz., to combat infection, the result of contamination already acquired, and to prevent the introduction of any more, is of equal importance, and I would add the prevention of dissemination of already acquired contamination by careless examination or unnecessary manipulation of parts. In my experience, it has been unnecessary to resort to the open operation for obtaining and maintaining reduction in this type of fracture, as we have found that overhead suspension with traction has been satisfactory. We also use simple molded plaster splints, including the foot and extending well above the knee, with wide fenestration at the site of the wound. In rare cases which do not respond to an intelligently applied closed method, temporarily maintaining reduction by internal fixation, especially a plate with screws, never wire bands, may be desirable, but should be applied only by a surgeon with wide experience in successful operative bone work. The open operation with internal fixation adds an unnecessary element of risk, especially with primary closure. We not infrequently employ partial or complete secondary closure of these wounds, as when the bone is actually exposed, and after the immediate danger of infection has passed. Obtaining and maintaining reduction by well applied external means without primary suture I believe to be the safest form of treatment, especially in the hands of the average surgeon; and it must be remembered that it is he, and not the specialist, who treats the great majority of the usual compound fractures of the leg.

DR. FRED W. BAILEY, St. Louis: It has been a question in my mind whether the suggestion of Dr. Thomas is a distinct improvement. Experience, of course, is the best teacher. My experience with simple compound fractures due to indirect violence, and such cases as he reports, is that they are by far the least troublesome. I agree with him in the necessity of getting to these cases early before extraneous infection has taken hold, and of careful preparation of the field, surgical cleanliness, and the removal of all devitalized tissues after careful preparation of the field. I agree with him in the value of alining and holding in position the fractured ends, and in the main, with internal permanent fixation in selected cases. Mobility, though slight, at the fracture site, such as often occurs in a cast with considerable padding, offers less hope for complete primary union. Sterilization of the wound and surface is a prime essential. Pure iodin followed by alcohol may possibly do harm; while it may control infection brought in to a degree, at the same time by further devitalizing the traumatized tissues a condition may be created which is ideal for the increase of infection. The best method of treating a recent compound fracture, indirect in type, is thorough sterilization of the field as for a major surgical operation, apposition of the ends of the bone after the wound itself has been properly cleansed, the use of some good chlorin product, by the Carrel-Dakin method for two or three days, then removal of the drain, and observation through a fenestrated cast; we then have the best reason to hope for an ultimately good result. As for putting the plate in position in acute fracture, I think it is a thoroughly justifiable surgical procedure in selected cases; but such cases are extremely rare. I am still too timid to take any compound fracture, direct or indirect, close it and place it permanently in a cast, depending on the blood picture, pulse and temperature as to whether they are running a benign course.

DR. W. D. COUGHLIN, St. Louis: I do not yet know how to tell whether I am dealing with a noninfected compound

fracture. It is true in many cases that the patient soon converts his small wound into a healed wound and so he has made a simple fracture of a compound fracture, but I have seen so much unnecessary mutilation and so many unnecessary deaths as a consequence of having had these noninfected fractures closed promptly, without drainage, that I am unalterably opposed to it. I do not believe that any compound fracture wound should be closed up by any one and every one. If Dr. Thomas and others like Dr. Thomas choose to treat a fracture in any particular way, I have nothing to say; but as a matter of teaching what should be taught to the rank and file of the profession, I think I am quite safe in saying that there are about four fundamental principles to be observed in the treatment of compound fracture: one is cleanliness, to remove devitalized tissue. I do not understand how in a noninfected fracture there can be very much devitalized tissue. The second is reduction, and third, the most essential principle in the treatment of a compound fracture, permanent and absolute fixation, if it is possible to obtain it. How to make drainage depends altogether on the experience of the operator. If he has no experience, the patient will be better treated if provision is made for drainage, but there should be fixation, reduction and cleanliness. No attempt should be made to close the wound. Whether to use a plate at the time of first treatment must be considered, but it ought to be the concensus of opinion of teachers of surgery that the less you meddle with compound fractures the better off the patient will be.

DR. FLORUS F. LAWRENCE, Columbus, Ohio: One of the things that was settled years ago was the way fractures healed and the rarity with which osteomyelitis followed compound fractures. Infection of the bone is the exception, and generally if there is infection it is of the soft parts. The most dangerous type of infection is with the tetanus bacillus. When we remember that oxygen is the natural defense against tetanus, it follows that if we cleanse the wound thoroughly with oxygen, or hydrogen peroxid, we may obviate any possibility or danger of tetanus. So, in the past twenty years or more, in all compound fractures, I have enlarged the opening when necessary to obtain complete hemostasis and to expose the bone, that it may be sutured or wired or nailed. I then flush the wound with a solution of hydrogen peroxid and close it. The fact that we have been treating bone does not mean that we must drain. A wound of bone unites as readily as a wound in soft parts if we give it the same opportunity, if we suture, nail or wire the fragments, removing those parts that are devitalized, or liable to become necrotic, and, above all, remove seriously damaged soft tissues from the wound and leave the wound protected. As Dr. Thomas suggested, we can close compound fractures and secure 95 per cent. uninfected wounds and primary union of both the bone and soft parts with perfect anatomic and functional results.

DR. ISIDORE COHN, New Orleans: I have been teaching students to treat as many of these fractures as simple fractures as possible. Thus I would excise what seems to be devitalized tissue and pack the wound with dichloramin-T, but never suture primarily. In all these cases we give antitetanic serum. Moreover, after excision of devitalized tissue, we do not put on plates or wire. There is a possibility of infection in compound fractures, and in the event of this, plates and screws become loosened and are not as effective as they might be. We use the portable roentgen-ray apparatus and immediately reduce the deformity by the McKenna traction table. We have been greatly pleased to see end-to-end apposition in most of the cases. In my own work, it has not been necessary in a single case to put on a plate or use wire or screws or anything of the kind. One thing that impressed itself on me was the use of a cast by Dr. Thomas for nine weeks without changing. If we leave a cast on nine weeks, the muscles will atrophy and contractures will result. In order to obtain the best results, it is necessary to change casts frequently, to give baths and massage as well as resistive exercises. The nonweight bearing brace diminishes the period of total disability.

DR. H. W. ORR, Lincoln, Neb.: I must confess to a certain measure of astonishment when I hear certain points with reference to the treatment of fractures debated that have been debated here this morning. One or two of the speakers have pointed the way to a solution of our problems, emphasizing the point that we must adhere to fundamentals. First of all, we must have anatomic reposition of injured parts at once and must maintain good relationship till healing occurs. If we disregard these two things, we have disregarded the principles that are essential for good results. To talk of putting metal plates regularly into compound fractures is suggesting something which, in the light of our war experience, no possible percentage of results can possibly justify. With our present resources in the matter of proper reposition and immobilization with Thomas splints and such adjuncts as ice tongs and bone pins, it is never very difficult to get proper position and to retain such position until there is good healing.

DR. DANIEL F. JONES, Boston: It is undoubtedly true that men of large experience can select the cases in which there may be closure without drainage, but for the average surgeon, the closure of compound fractures is a dangerous procedure. It is particularly dangerous to close the wound without drainage after putting in a steel plate. We must not forget that the great majority of these fractures of the lower leg can be held in position by traction. If skin traction or the Sinclair skate cannot be used, sufficient traction can always be obtained by a pin, either over or through the os calcis, to hold the fragments in place.

DR. WILLIAM FULLER, Chicago: I believe that practically all surgeons agree that the use of any foreign material such as screws, plates and wire, in the treatment of compound fractures, is a serious mistake, except in very rare instances. The first and prime consideration in all compound fractures is the prevention or elimination of infection in the wound. So important is this that the bone lesion itself may, with advantage, be ignored at first, except for some simple appliance which will prevent further trauma of the soft parts by the sharp ends of the fragments. Time does not appear to be valuably spent when we occupy it at this late day in discussing papers advocating the use of foreign material in the treatment of the fractures of the long bones, especially compound fractures. It is reasonable that the manipulations necessary to introduce foreign material for the purpose of holding a fracture will add a great and serious element of trauma to tissues already damaged in compound fractures. Such measures cannot be condemned too emphatically.

DR. DENNIS W. CRILE, Chicago: I have recently had an opportunity to look up the results in a large number of fractures of the leg. The period of disability was five times as long in those cases in which internal fixation had been used as it was in those treated without any sort of internal fixation. I think the use of metal fixation is a vicious practice when dealing with compound fractures, with rare exceptions. The worst results I have ever seen have been those in which metal has been introduced in the presence of infection. We never introduce any metal or foreign substance into any compound fracture.

DR. T. TURNER THOMAS, Philadelphia: I laid before you what I had been doing with compound fractures of the leg, the why of it and the results. Can any one show where internal fixation has done damage? There has not been a single case in which the fear of infection concerned me. Give me a method by which I can absolutely immobilize these nicely adjusted fragment ends and I am confident that I shall show a greater percentage of primary healings than I have reported today. To have used a method of continuous extension, in my opinion, would have favored unsatisfactory development and, with drainage, would have favored infection. I wanted a method that would give firm fixation of the fragments and as nearly perfect reduction as possible at one sitting, with thorough cleansing of the wound. I believe that no one has yet shown better results in a similar number of cases of the same kind. Nearly every case had a nearly normal end-result. Neither life nor limb was threatened in any case

and I lost no sleep. What I have been interested in much more than in these compound fractures is to establish the idea that most fractures of the long bones, including compound fractures, are due to a fall and consequently to indirect violence. If this is true, then most of these compound fractures are being presented to us with perfectly clean wounds, except for what infection the usually briefly protruding fragment and small surface may pick up. May not tincture of iodin be trusted to neutralize that? Some one said that he could not tell which wound was infected and which was not. No one can. But believing in the fracture mechanism, I tried out this method of treatment with caution and it worked. In the early cases, I kept the wounds uncovered by the cast, ready for quick exposure on the slightest indication of infection. Continuing experience brought increasing confidence, and an increasing desire for perfect immobilization, so that the close fitting complete cast was later resorted to and never afterward abandoned. I cannot see that I should hold myself responsible for what some one else may do with the method. On the other hand, it might well happen that in the hands of the average surgeon it would give better results than the methods which have been in vogue. In some of the early cases, the small amount of pus burrowed persistently for a long time, but even in them I had far less trouble than in similar cases treated by open methods. Again let me emphasize that the pathogenesis of the compound fracture offered here is an offspring of the general mechanism of fractures and dislocations already mentioned and that they are expected to stand or fall together.

THE CHAULMOOGRA OIL TREATMENT OF TUBERCULOUS LARYNGITIS

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Recently Lukens [1] called attention to the use of chaulmoogra oil in the treatment of tuberculous laryngitis, stressing the relief of pain and dysphagia which followed its use. Certainly, any agent which is capable of relieving the distress caused by an actively tuberculous larynx is worthy of the utmost consideration, and should be given a trial.

Although the use of chaulmoogra oil has been attended by quite markedly beneficial results in the treatment of leprosy and, by some, is regarded as a specific in this disease, its use in tuberculosis is still in the experimental stage. Kolmer, Davis and Jager [2] have shown that the oil has no effect on virulent tubercle bacilli in their experiments on guinea-pigs, using an in vitro-vivo method. Therefore, we should not expect the oil to act as an active bactericidal agent in any lesions. Voegtlin, Smith and Johnson,[3] in a more extensive set of experiments, arrive at the same negative conclusion and, indeed, in one of their series they state that the treatment of their infected guinea-pigs with chaulmoogra oil may have been actually injurious.

In view of these facts, Rogers'[4] note of warning that chaulmoogra oil should be cautiously used, and then only by experts, seems peculiarly apropos.

1. Lukens, R. M.: Chaulmoogra Oil in the Treatment of Tuberculous Laryngitis, J. A. M. A. **78**: 274 (Jan. 28) 1922.
2. Kolmer, J. A.; Davis, L. C., and Jager, R.: Influence of Chaulmoogra Oil on Tubercle Bacillus, J. Infect. Dis. **28**: 265 (March) 1921.
3. Voegtlin, Carl; Smith, M. I., and Johnson, J. M.: Therapeutic Value of Chaulmoogra Oil and Its Derivatives in Experimental Tuberculosis, J. A. M. A. **77**: 1017 (Sept. 24) 1921.
4. Rogers, L.: Successful Treatment of Leprosy by Chaulmoogra and Other Oils, Practitioner **107**: 77 (Aug.) 1921.

In the Colfax School for the Tuberculous, seven patients were set aside for treatment with chaulmoogra oil. These patients were purposely chosen because of the severity of their laryngeal lesions which, with one exception, caused excruciating pain and dysphagia. With this one exception (Case 6) they were all febrile patients with far advanced pulmonary tuberculosis, and the prognosis was, therefore, grave. The most that was hoped for was the relief of symptoms. In all seven of the patients, there was involvement of the epiglottis, arytenoids and the cords.

The accompanying table shows the duration of treatment, which was carried out after the method described by Lukens with a laryngeal syringe; the pulmonary condition and the symptoms before and after treatment.

In these cases the treatment was an average of three injections a week, beginning with a 10 per cent. solution of chaulmoogra oil in olive oil for one week, followed by a 20 per cent. solution thereafter.

TREATMENT AND RESULTS

Case	Duration of Treatment in Weeks	Lung Condition		Symptoms Before Treatment			Symptoms After Treatment		
		Before	After	Temperature	Dysphagia	Aphonia	Temperature	Dysphagia	Aphonia
1	7	Right, moderately advanced; left, advanced	No change	100 to 102	+	+	99.7 to 103.4	0	+
2	6	Right, advanced; left, advanced	Improved by roentgen ray	Normal to 104+	+	Slight	Normal to 104+	Slight	+
3	7	Right, advanced; left, moderately advanced	Progressive	Normal to 102	+	+	100 to 104+	+	+
4	8	Right, advanced; left, advanced	Progressive	99.4 to 101.2	+	+	100 to 103.3	+	+
5	2	Right, advanced; left, advanced	.....	99.5 to 100+	+	+	99.5 to 102.5	+	+
6	6	Right, advanced; left, advanced	Arrested	Normal	0	+	Normal	0	+
7	4	Right, advanced; left, advanced	Progressive	101.8 to 103.6	+	+	102.4 to 104	+	+

From a study of the table, it will be seen that in only one instance (Case 1) were the subjective symptoms markedly altered. In this case, the relief of the dysphagia was remarkable. The patient now states that her throat feels much better, and that she swallows more easily. Examination reveals a normal appearing epiglottis, small arytenoids, and cords thickened but pale. While there is no doubt that the local condition is much better, we must not forget that all tuberculous foci show a marked tendency to remissions and exacerbations, and that the improvement shown in Case 1 may be merely a remission and not necessarily an improvement resulting from local medication.

Unfortunately, tuberculous laryngitis is usually secondary to pulmonary tuberculosis; in any treatment the general condition must also be considered. In our series of cases, the general condition of two showed no change. Patient 2 was receiving other special treatment, and so cannot be considered. Patient 6 had an arrested case, and was given the oil merely because he asked for it and no change in his general condition was expected. With these exceptions, the general condition of every patient grew steadily worse. Their temperatures averaged consistently higher in the afternoons and evenings than they had previously. Whether or not this was caused by the oil we are not at present prepared to state, but it was the phenomenon observed.

Indeed, in Case 1, in which the larynx itself showed such marked improvement, the temperature fell an average of 1 degree F. shortly after the oil was discontinued.

It should be stated that, in general, the patients said that their throats felt somewhat better after each treatmen. Except in Case 1, this was transitory, however, and in two cases, 5 and 7, injection of the superior laryngeal nerves was necessary to relieve the pain.

CONCLUSIONS

1. Intralaryngeal applications of a 10 to 20 per cent. solution of chaulmoogra oil in olive oil may relieve the dysphagia of an advanced laryngeal lesion entirely, but such relief has followed its use in only one out of our seven cases. Slight temporary relief occurred in every case.

2. On the other hand, the general condition of a febrile patient may, possibly, be unfavorably influenced by such treatment.

3. Caution should be used in the laryngeal treatment of tuberculosis with chaulmoogra oil until more accurate data are in our possession concerning its local and general effects.

CHAULMOOGRA OIL IN THE TREATMENT OF TUBERCULOUS LARYNGITIS

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AND
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Since the publication of Lukens' paper [1] on the use of chaulmoogra oil in tuberculous laryngitis, we have introduced this treatment in the Throat Clinic of the U. S. Veterans' Hospital, Maywood, Ill. Of the patients in this hospital, from 300 to 400 are suffering from pulmonary tuberculosis in some of its various stages. In the last four months, forty cases of tuberculous laryngitis were selected for treatment with chaulmoogra oil. Our technic differs from that of Dr. Lukens only in these respects: A special laryngeal syringe is used; the patients are treated daily, and only the 20 per cent. solution of chaulmoogra oil in liquid petrolatum is employed.

The cases handled fall into four groups:

GROUP 1

The largest number treated were those with distinct but not extreme laryngeal lesions. These patients had generally been hoarse for months previous to treatment, and had various degrees of discomfort, ranging from a vague sense of pain referred to the throat to definite dysphagia. In these cases the symptoms were controlled by the intralaryngeal injections of chaulmoogra oil, though in the severer cases some vestige of discomfort maintained itself. The dysphagia is often relieved in a few treatments, but the condition of the voice has been found to be generally but slowly affected.

One remarkable case of this group should be cited:

J. J. S. had dysphagia and hoarseness for more than six months. His general condition was fairly good, but his throat caused him much distress. The first attempts at swallowing were exquisitely painful, with excruciating radiations to the ears. After the first few swallows the acts of deglutition became somewhat more tolerable. The objective findings consisted chiefly of patches of ulceration and infiltration involving the posterior two thirds of both cords; pale infiltration of the aryteno-epiglottidean folds, particularly the right, and sprouting granulations in the interarytenoid region. This case was the "chorditic" type of tuberculous laryngitis, in which the arytenoids had become secondarily involved. For the first three days of the chaulmoogra oil treatment the patient could notice no change. On the fourth and fifth days, improvement was admitted. He remarked then that his voice felt stronger and clearer. On the eighth day he felt entirely free from discomfort, his appetite had greatly improved, and he spoke without effort. Since then his lesions have progressively resolved, and his laryngeal condition has improved in every way.

Some cases that at first failed to respond satisfactorily to the chaulmoogra oil treatment went along excellently after one or two applications of Lake's pigment [2] had been given and the chaulmoogra oil treatment continued. Control of pain was secured in moderately advanced laryngeal lesions even in cases of advanced tuberculosis that went on to a fatal issue. Occasionally the anodyne effect of orthoform had to be used as an adjuvant. In none of these cases was cocain used.

GROUP 2

The second group of cases included those of early tuberculosis in which the laryngeal symptoms were only a subjective sense of tickling or irritation in the throat, associated with slight hoarseness or weakness of the voice. The physical signs revealed by the laryngoscope were slight. These cases often cleared up surprisingly after a few treatments. Occasionally the pain would recur after the treatments had been discontinued, but would then be as quickly controlled as originally.

An interesting case was one of pachydermia laryngis. Hoarseness and weakness of the voice had extended for many months. With the first few treatments a remarkable improvement in the voice occurred. A further strengthening of the voice took place after tonsillectomy. The case was pronounced nontuberculous by the medical department.

GROUP 3

The third group included those of advanced tuberculosis with advanced laryngeal lesions, that had previously not been benefited by the usual treatments. Chaulmoogra oil likewise was not able to afford them any lasting comfort. The dysphagia complicated their other miseries till the inevitable end.

GROUP 4

Chaulmoogra oil treatment was also carried out in cases of chronic laryngitis dependent on nasal conditions, but without any particularly beneficial results.

A few cases of syphilitic laryngitis that were characterized by dysphagia were treated with the oil at the same time that vigorous antisyphilitic treatment was being given. The chaulmoogra oil did not seem to be of especial value in these cases.

It perhaps deserves mention that a skin lesion of the nose in a tuberculous patient pronounced lupus by the dermatologists was treated with chaulmoogra oil with gratifying results. The lesion, when first seen, was of six weeks' duration, and had become progressively more tender and prominent. After a week's use of

1. Lukens, R. M.: Chaulmoogra Oil in the Treatment of Tuberculous Laryngitis, J. A. M. A. **78**: 274 (Jan. 28) 1922.

2. The formula introduced by Lake consists of lactic acid, 50 gm.; liquor formaldehydi, 7 c.c.; phenol (carbolic acid), 10 gm.; distilled water, sufficient to make 100 c.c. The phenol acts as an anodyne, and pain rarely lasts more than a few minutes. Cocain is only occasionally needed for the first few applications when the throat is unduly irritable.

chaulmoogra oil, all discomfort had disappeared and the lesion showed marked regression. The patient is still under treatment.

CONCLUSION

Chaulmoogra oil, we believe, should have a definite place in the treatment of laryngeal tuberculosis. It is useful in the majority of cases, though in the treatment of laryngeal tuberculosis as a whole it cannot entirely replace the other forms of medication, such as the cocain-epinephrin spray, orthoform, menthol and Lake's pigment, superior laryngeal nerve blocking, epiglottidectomy, etc.

Some may be skeptical of the value of chaulmoogra oil, as employed in these cases, because the mechanism of its action is not clear. It may be true that the oil has no specific effect, but its beneficial action can be perhaps adequately explained by its detergent, anesthetic and counterirritant properties. Barwell[3] says: "Intratracheal-oil injections act in the same way (i. e. like steam inhalations and oil nebulae) in relieving dryness and soreness of the throat, and I have found them very useful in cases of advanced ulceration, reducing inflammation and relieving discomfort." He employed a 1 per cent. solution of menthol in liquid petrolatum, but from both theoretical considerations and clinical experience it would appear that chaulmoogra oil should act more efficaciously.

3159 West Roosevelt Road.

Clinical Notes, Suggestions, and New Instruments

A SIMPLE MECHANICAL STAGE

PHILIP REICHERT, RAY BROOK, N. Y.

The apparatus here described is a simple, efficient and inexpensive mechanical stage for the use of students practicing microscopy.

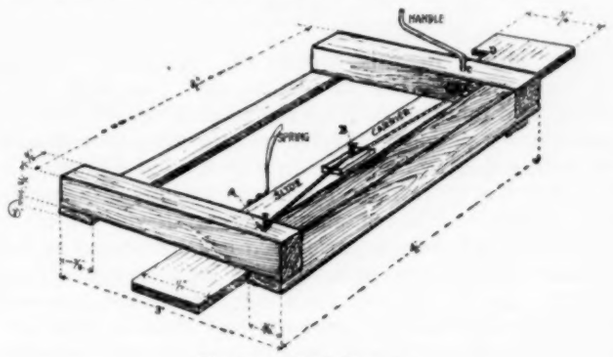
The frame is of wood, well smoothed with fine sandpaper, and glued at the corners. Its outside dimensions are 3 by 4 inches. On the right cross-piece a vertical hole receives a handle made by bending heavy wire into shape. A large opening has been drilled horizontally beneath, making the wire accessible from the side so that a thread may be wound about it by turning the handle.

The slide carrier imitates those on the expensive machines. It is made of wood 5½ inches long, ⅛ inch thick and ½ inch wide, except for a projection on the right side which makes the width on that side ¾ inch. This projection receives the slide; a flat spring cut from thin brass ⅛ inch wide and 2 inches long is placed at a suitable distance on the left to hold the slide against this projection. The spring is fastened to the carrier by means of two wire brads; it is wise to hold the thin board in a vise while the brads are being driven so as not to crack the wood.

The post *B* is set on a block 1 inch long, ½ inch wide and ⅛ inch thick. The left margin of this block must be 2½ inches from the left margin of the slide carrier. A rubber band is stretched from this post to the post *A*. Placed diagonally as shown, it tends to draw the slide carrier to the left, and at the same time keeps it tight against the frame so that the slide will ride smoothly and not wobble.

The action of the rubber band is opposed by a heavy black thread which is fastened to the post *B*, the other end going into the horizontal opening in the right cross piece, and winding about the lower end of the handle at *C*. The handle should have a radius of about 1 inch. It is evident that rotation of the handle will cause the slide carrier to move from left to right or reverse.

The frame is mounted on the stage of the microscope and held in place by means of a heavy rubber band or a screw clamp such as may be purchased at any hardware shop. When one horizontal excursion is complete, the clamp is loosened, and the frame is moved either forward or backward and



Simple mechanical stage.

again clamped so as to permit a new part of the field to pass beneath the objective.

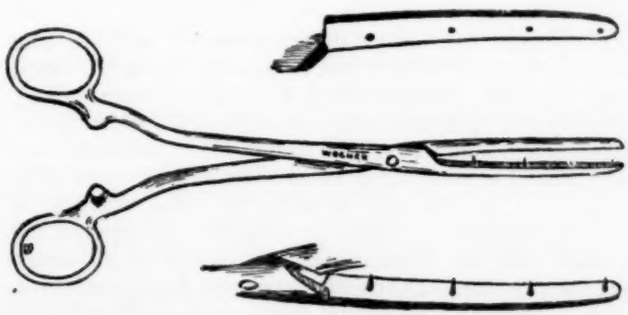
The cost of the materials is approximately 25 cents, and the apparatus can be easily made in less than an hour. In practice, it permits steady and accurate control of the movements of the microscopic field.

3. Barwell, Harold: Diseases of the Larynx, Oxford University Press, 1907.

A NEW MUSCLE CLAMP

JOSEPH L. DECOURCY, M.D., CINCINNATI

This muscle clamp was adopted primarily for muscle section in thyroidectomy. The requirements of such a clamp are to exert a hemostatic action on the vessels of the muscle and at the same time to hold the muscles and fascia in a firm grasp without crushing the tissues. The disadvantage of the clamps thus far used, in my opinion, has been that their crushing action not infrequently leads to tissue necrosis and favors infection and adherent scars.



New muscle clamp.

The clamp consists of a smooth surface with four sharp protrusions, as shown. The protrusions insert themselves into the fascia and muscles and hold them firm, while just sufficient pressure is made from the smooth surfaces of the clamp to close the thin walled vessels without making undue pressure on the other tissues.

A Prescription.—Filling a prescription is not the same as buying a suit. This the customer realizes. The man who has been cheated on furniture or wearing apparel has pretty much himself to blame, for he should have some knowledge of what he is buying. The same is not true of medicine. The customer trusts, implicitly, to the druggist; he expects his prescription to be filled by one who knows how to compound medicine and he expects to receive the best drugs.—Presidential Address, W. Gay Clark, Tennessee Pharmaceutical Association.

DISPENSARY SERVICE IN THE UNITED STATES

FIRST PRESENTATION OF DISPENSARY DATA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

The object of this census of dispensaries by the Council on Medical Education and Hospitals is to obtain and tabulate data on the medical institutions for *ambulatory* patients, similar to that already published regarding hospital service in the United States. To visualize the work done by all the various dispensaries and clinics requires a simultaneous survey of all of them, including dispensaries that are conducted as outpatient departments of hospitals; independent dispensaries; special clinics, such as tuberculosis, mental hygiene, venereal disease, baby and child hygiene and eye, ear, nose and throat dispensaries, as well as industrial dispensaries and group practices.

The number of each kind of dispensaries known to exist in the United States is given in Table 1.

TABLE 1.—NUMBER AND CLASSIFICATION OF DISPENSARIES IN THE UNITED STATES

General dispensaries		946
Special dispensaries:		
Tuberculosis	667	
Venereal disease	487	
Mental hygiene	260	
Baby and child hygiene	566	
Outpatient departments of eye, ear, nose and throat hospitals	37	
Outpatient offices and stations of the United States Public Health Service	119	
Outpatient departments of orthopedic hospitals	16	
Miscellaneous	53	
		2,205
		3,151
Industrial (enumeration not completed)		92
Total dispensaries known		3,243

There are still other dispensaries of each of the several classes that have not responded or about which there are not sufficient data to classify them. Particularly is the enumeration of industrial dispensaries incomplete. The number of industrial dispensaries has been placed at something more than 400 by some who are in touch with industrial medicine. This estimate is very conservative. There is evidence to support an estimate that the dispensaries and clinics of all kinds that provide the services of physicians for ambulatory patients, including industrial dispensaries with salaried physicians, would number more than 4,000.

As to the amount of service rendered, the general dispensaries that furnished reports handled 3,872,345 patients, who made 11,798,887 visits during the last fiscal year. Including a reasonable estimate for the general dipensaries that did not report, these figures would be increased to 4,250,000 patients and 13,500,000 visits. In the special dispensaries the average number of patients in each institution is considerably lower than in general dispensaries, but the average number of visits per patient is much larger. An estimate based on reports received indicates that the special dispensaries cared for a total of 3,750,000 patients during the year, who in that time made approximately 16,000,000 visits. The grand total, therefore, of patients in all general and special dispensaries and clinics would number approximately 8,000,000 and the visits made by them, approximately, 29,500,000. The number of separate individuals using dispensaries and clinics is less than 8,000,000, since allowance must be made for those who patronized two or more institutions during the year.

By adding to the special dispensaries enumerated in Table 1 the number of clinics of corresponding kind reported as being held in the general dispensaries, it will be found that there are at least 863 separate dispensaries and clinics for tuberculosis; 793 for venereal diseases; 454 for mental hygiene; 881 for baby and child hygiene; 631 for eye, ear, nose and throat, and 255 for orthopedics.

TABLE 2.—NUMBER AND WORK OF GENERAL DISPENSARIES BY STATES

State	Population 1920	No. of General Dispensaries	Patients Last Fiscal Year	Visits by Patients Last Fiscal Year
Alabama	2,348,174	7	37,207	113,455
Arizona	334,162	3	56,091	69 182
Arkansas	1,752,204	9	12,284	67,901
California	3,426,861	56	193.920	599,751
Colorado	939,629	6	106,754	148,003
Connecticut	1,380,631	16	32,270	136,719
Delaware	223,003	5	8,782	35,571
District of Columbia	437,571	13	23,351	60,700
Florida	968,470	4	16,213	10,226
Georgia	2,895,832	5	11,109	69,882
Idaho	431,866	1	912	2,751
Illinois	6,485,280	48	169.872	559,453
Indiana	2,930,390	10	15,913	47,703
Iowa	2,404,021	11	17,455	45,997
Kansas	1,769,257	11	29,537	60,221
Kentucky	2,416,630	14	27,855	113,575
Louisiana	1,798.509	12	78,575	281,068
Maine	768,014	8	4,641	14,508
Maryland	1,449,661	25	111,775	327,495
Massachusetts	3,852,356	74	268,775	1,055,225
Michigan	3,668,412	31	127,215	303,931
Minnesota	2,387,125	17	60,150	235,791
Mississippi	1,790,618	5	16,119	10,022
Missouri	3,404,055	28	130,973	533,482
Montana	548,889	5	17,535	39,933
Nebraska	1,296,372	9	17,550	68,801
Nevada	77,407	3	6,609	17,275
New Hampshire	443,083	3	861	2,244
New Jersey	3,155,900	42	134,856	376,981
New Mexico	360.350	1	1,500	.....
New York	10,385,227	163	1,182,818	3,439,038
North Carolina	2,559,123	9	6,948	22 905
North Dakota	646,872	2	853	204
Ohio	5,759,394	40	140,805	461,613
Oklahoma	2,028,283	4	2,352	16,214
Oregon	783,389	3	2,020	4,250
Pennsylvania	8,720,017	136	537.438	1,689,512
Rhode Island	604,397	13	33,781	137,860
South Carolina	1,683,724	7	21,028	26,206
South Dakota	636,547	7	11,143	71,209
Tennessee	2,337,885	9	35,717	109,404
Texas	4,663,228	13	29,560	90,358
Utah	449,396	4	4,985	5,277
Vermont	352,428	4	3,513	7,020
Virginia	2,309,187	14	47,868	88,446
Washington	1,356,621	9	4,964	59,490
West Virginia	1,463,701	10	5,009	7,739
Wisconsin	2,632,067	14	62,733	149,576
Wyoming	194,402	3	2,151	4,720
Totals	105,710,620	946	3,872,345	11,798,887

On pages 466 to 475 appears a list of 946 general dispensaries or those that provide general medical and surgical care for the ambulatory sick of the communities which they serve. The list gives the name and local address of the dispensary and, opposite each, (1) the number of individual patients received last fiscal year and (2) the number of visits made by these patients during the last fiscal year, as reported by the

medical director or superintendent. Additional data on special dispensaries are being prepared for later publication in THE JOURNAL, and will be included in a special reprint of dispensary information.

The number of general dispensaries and the work done by them during the last fiscal year are summarized by states in Table 2. Similar data for the fifty largest cities of the United States are given in Table 3.

TABLE 3.—NUMBER AND WORK OF GENERAL DISPENSARIES IN FIFTY LARGEST CITIES

	Population 1920	General Dispensaries Reporting	Patients Last Fiscal Year	Visits by Patients Last Fiscal Year
New York	5,621,151	60	958,622	2,699,561
Chicago	2,701,705	33	159,493	498,230
Philadelphia	1,823,779	54	356,680	1,176,726
Detroit	993,739	9	54,416	170,602
Cleveland	796,836	11	61,702	279,665
St. Louis	773,000	13	86,342	428,653
Boston	747,923	27	189,692	793,040
Baltimore	733,826	22	109,387	323,865
Pittsburgh	588,193	15	49,261	122,904
Los Angeles	575,480	3	60,577	102,951
San Francisco	506,676	15	63,142	268,105
Buffalo	505,875	11	39,764	197,323
Milwaukee	457,147	7	37,833	80,957
Washington, D. C.	437,414	13	23,351	60,700
Newark, N. J.	414,216	6	26,628	105,554
Cincinnati	401,158	6	24,535	83,250
New Orleans	387,408	6	68,074	218,287
Minneapolis	380,582	4	19,157	102,060
Kansas City, Mo.	324,410	10	38,021	78,856
Seattle	315,652	3	.....	34,914
Indianapolis	314,194	2	.....	.....
Jersey City, N. J.	297,864	4	22,023	50,206
Rochester, N. Y.	295,750	3	9,289	41,694
Portland, Ore.	258,288	2	10,785	18,018
Denver	256,369	1	7,439	25,713
Toledo, Ohio	243,164	5	3,246	9,964
Providence, R. I.	237,595	7	21,550	83,280
Columbus, Ohio	237,031	4	20,758	11,928
Louisville, Ky.	234,891	3	13,088	83,692
St. Paul, Minn.	234,680	1	6,260	21,804
Oakland, Calif.	216,361	3	10,997	54,779
Akron, Ohio	208,435	1	14,885	47,272
Atlanta, Ga.	200,616	1	6,476	37,861
Omaha	191,601	4	16,796	68,361
Worcester, Mass.	179,741	4	12,425	45,140
Birmingham, Ala.	178,270	3	18,659	62,178
Richmond, Va.	171,667	2	11,343	31,347
Syracuse, N. Y.	171,647	1	5,267	27,639
New Haven, Conn.	162,390	3	6,262	56,880
Memphis, Tenn.	162,351	1	13,311	46,193
San Antonio, Texas	161,379	2	7,754	20,276
Dallas, Texas	158,976	2	3,316	8,740
Dayton, Ohio	152,559	2	5,480	9,433
Bridgeport, Conn.	149,152	3	12,788	51,756
Houston, Texas	138,276	1	7,148	18,483
Hartford, Conn.	138,036	2	4,500	11,520
Scranton, Pa.	137,700	6	11,482	58,001
Grand Rapids, Mich.	137,634	2	1,898	3,356
Paterson, N. J.	135,866	2	4,335	12,235
Youngstown, Ohio	132,358	2	1,613	5,847
Totals	25,381,011	416	2,717,850	8,859,809

PHYSICIANS SERVING IN GENERAL DISPENSARIES

On the question as to how many physicians are serving full-time and how many part-time, there were 615 general dispensaries that answered, not including any of the dispensaries run by the state or federal government. These 615 employ 1,268 full-time physicians, or an average of two for each dispensary, and 9,929 part-time, or an average of sixteen for each dispensary. The answers on this question are summarized in Table 4.

TABLE 4.—PHYSICIANS SERVING IN GENERAL DISPENSARIES

	Number of Full-time Physicians	Aver. No. Full-time Physicians	Number of Part-time Physicians	Aver. No. Part-time Physicians
459 outpatient departments reporting	1,088	2	7,730	14
157 independent dispensaries reporting	180	1	2,199	14
615 general dispensaries	1,268	2	9,929	16

In answer to whether they have separate services for the different departments of medicine and surgery, 429, or 59 per cent., of those answering the question said that they have separate services, and 293, or 41 per cent., said that they have one undivided service for all kinds of cases.

TABLE 5.—TEACHING IN GENERAL DISPENSARIES

	Teach Medical Students		Post-graduate Teaching		Interns		Nurse Training	
	No.	%	No.	%	No.	%	No.	%
378 outpatient departments	131	35	84	22	271	72	316	84
56 independent dispensaries	34	61	11	20	11	20	31	55
434 Totals	165	38	95	22	282	65	347	80

TEACHING IN GENERAL DISPENSARIES

Four hundred and thirty-four dispensaries are doing systematic, organized, medical teaching. Their replies are summarized in Table 5.

Of the 637 hospitals approved by the Council for the training of interns, 418, or 66 per cent., have outpatient departments. The figures in detail are shown in Table 6.

TABLE 6.—OUTPATIENT SERVICE IN HOSPITALS APPROVED FOR INTERNSHIPS

	Number of Hospitals Approved	Number That Have Dispensary Service	Per Cent.
1. General hospitals	503	338	67
2. State and other hospitals for the insane	28	6	21
3. Other special hospitals	106	74	70
Totals	637	418	66

SOURCE OF FINANCIAL SUPPORT

Reports on the source of financial support received from 651 of the general dispensaries show that 377, or 58 per cent. of those reporting, receive some financial support from patients; 223, or 34 per cent., from endowments; 224 receive gifts; thirty-one get county aid; ninety get city aid, and sixty-three get state aid.

The outpatient departments of hospitals are more fortunate than independent dispensaries in having endowments and in getting contributions from patients. Thirty-seven per cent. of the outpatient departments reported endowments, as against 24 per cent. of the independent dispensaries; and 66 per cent. of the outpatient departments collect something from patients, as against 34 per cent. of the independent dispensaries. The majority of outpatient departments that reported endowments probably meant that the hospital, not the outpatient department, as such, was endowed. In securing financial aid from city, state or federal government, the independent dispensaries run ahead of the outpatient departments. Further details regarding the sources of financial support will be found in Table 7.

TABLE 7.—FINANCIAL SUPPORT OF GENERAL DISPENSARIES

	Outpatient Departments		Independent Dispensaries		Totals	
	No.	%	No.	%	No.	%
Number reporting financial support	494	..	157	..	651	..
Source of financial support:						
Endowments	185	37	38	24	223	34
Patients	324	66	53	34	377	58
Gifts	154	31	68	44	222	34
County aid	20	4	11	7	31	5
City aid	45	9	45	29	90	14
State aid	50	10	13	8	63	10
Federal aid	3	6	2	1	5	7

SOCIAL WORKERS IN GENERAL DISPENSARIES

Social service workers are employed by 380 general dispensaries, which use 964 salaried and 1,171 volunteer workers, or a total of 2,135. Only thirty-nine said that they depend on volunteers entirely to do their social service.

TABLE 8.—SOCIAL WORKERS IN GENERAL DISPENSARIES

	No. Dispensaries	No. of Volunteer Workers	No. Dispensaries	No. of Salaried Workers	No. Dispensaries	No. of Full-time Workers
278 outpatient departments	126	974	..	774	..	722
102 independent dispensaries	39	197	72	190	60	140
380 Totals	165	1,171		964		862

OBSERVATIONS

Some of the main facts that have been brought to light in connection with the survey are:

1. There is a steady increase in the number of patients seeking treatment in general dispensaries.

2. There has been an unprecedented increase since the war in the number of special clinics and dispensaries, such as those for tuberculosis, venereal disease, mental hygiene and child hygiene.

3. There is great need for individualized study and treatment of dispensary patients, to counteract what seems to be a prevailing tendency to routinization.

4. There is need of a closer bond between the outpatient service and the other service of hospitals, and this will be best met by having the hospital and the outpatient staffs identical and by having unified records.

5. In the matter of finances there is an increasing tendency to charge nominal fees, thereby placing part of the cost of an institution on the patient.

6. A general increase is noted in the use of social service workers to see that patients continue their treatment, and to investigate their social and financial status so as to prevent pauperizing.

7. The difficulty of securing satisfactory data is increased by the inadequacy of clinical and office record systems in a large number of institutions.

8. There is a great and increasing amount of educational work, especially the teaching of interns, medical students, graduates and pupil nurses.

ACKNOWLEDGMENTS

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Among the many that should be mentioned are the state, national and local health departments, and various national and state volunteer organizations, together with their branches and others.

It is hoped that the statistics here presented, as well as those that are being prepared for later publication, will be of interest and service to all who are concerned with dispensaries.

The amount of data, the degree of completeness and the accuracy obtained are indeed gratifying, and it is felt that a basis has been established for the comparison of data that may be obtained by future surveys, which it is confidently hoped and expected will show unprecedented progress in development of dispensaries and the improvement of their services to their respective communities.

GENERAL DISPENSARIES OF THE UNITED STATES

SHOWING THE NUMBER OF PATIENTS RECEIVED AND THE NUMBER OF VISITS TO THE DISPENSARY BY PATIENTS DURING THE LAST FISCAL YEAR

Including outpatient departments of hospitals and independent dispensaries that give a general medical and surgical service.

Independent dispensaries are marked (†), and *those not so marked* are the outpatient departments of hospitals.

Other classifications indicated are: (*), outpatient department of hospital that is approved for a general intern training; (**), outpatient department of hospital that is approved for a special intern training; (¶), dispensary that serves employees and community; (⁺), dispensary that serves employees and their families; (‡), school infirmary.

ALABAMA

	Patients Last Year	Visits Last Year
Birmingham		
Birmingham Baptist Hospital, 708-14 Tuscaloosa Ave.	5,475	10,875
*Hillman Hospital, Ave. F and 20th St.	12,384	49,803
Northside Infirmary, 1508, 7th Ave.	800	1,500
Dothan		
Frazier Hospital, S. St. Andrews St.	655	1,492
Fairfield		
¶Employes Hospital of Tennessee Coal, Iron and Railway Company	3,640	8,650
Mobile		
*City Hospital, 156 N. Broad St.	6,543	24,358
Tuskegee Institute		
*John A. Andrew Memorial Hospital	7,710	16,777
Totals	37,207	113,455

ARIZONA

	Patients Last Year	Visits Last Year
Bisbee		
*Copper Queen Hospital	25,938	27,910
Miami		
Miami Inspiration Hospital	29,021	37,978
Phoenix		
†Maricopa County Health Center	1,132	3,294
Totals	56,091	69,182

ARKANSAS

	Patients Last Year	Visits Last Year
Fort Smith		
†Fort Smith Federated Welfare Assn., Rogers Ave. and 2d St.	306	.....
Hot Springs		
Leo N. Levi Memorial Hospital, Prospect Ave. and Quapaw St.	5,025	40,962
Little Rock		
Logan H. Roots Memorial City Hospital, 604 E. 2d St. (Isaac Folsom Clinic)	2,239	16,195
Pettus Surgical Infirmary, 110-112 W. 9th St.	265	.....
Pulaski County Hospital, 26th and Jones Sts.	1,810	1,975
St. Luke's Hospital, 1920 Schiller St.	2,499	7,497
North Little Rock		
†Medical Clinic, City Hall	(No data available)	
Pine Bluff		
†The Pine Bluff Clinic, 5th and Maine Sts.	(New)	
West Helena		
†Medical Clinic, Court House	140	1,272
Totals	12,284	67,901

CALIFORNIA

	Patients Last Year	Visits Last Year
Alameda		
†Alameda City Health Center, 1512 Oak St.	684	3,243
Bakersfield		
Kern County Hospital, 3100, 19th St.	3,650	(No record)
Berkeley		
†Berkeley Dispensary and Health Center, 830 University Ave.	6,265	13,819
‡University of California Infirmary	5,005	41,113
Dorris		
Dorris Hospital, 3d and Oregon Sts.	1,040	2,250

	Patients Last Year	Visits Last Year
Fort Bragg		
Fort Bragg Hospital, Inc., Main and Fir Sts...	1,500	14,500
Fresno		
*Fresno County Hospital, Ventura Ave.....	3,200	4,000
Hobart Mills		
Hobart Hospital	859	2,462
Long Beach		
Seaside Hospital, 14th St. and Magnolia Ave...	388	.....
Los Angeles		
*Boyle Ave. Dispensary O. P. Dept. White Memorial Hosp., 304 Boyle Ave.	43,510	49,330
**Children's Hospital, 4616 Sunset Blvd.	2,947	10,899
†Graves Memorial Dispensary, 737 N. Broadway	14,120	42,722
McCloud		
McCloud Hospital, 4 Sisson Road	156	3,297
Oakland		
Baby Hospital Assn., 5105 Dover St.	3,238	14,538
Fabiola Hospital Assn., Moss Ave. and Broadway	859	1,301
†Public Health Center of Alameda County, 3105 Grove St.	6,990	38,940
Ontario		
†Ontario Health Center, Sultana and Grove Sts.	322	.....
Pasadena		
†Pasadena Dispensary, 38 Congress St.....	(No record)	9,001
Portola		
†Western Pacific Railway Hospital	720	3,640
Richmond		
†Richmond Health Center, 237, 9th St.	(New)	
Riverside		
†Riverside Clinic, 317 Loring Bldg.	498	1,223
Riverside County Hospital, Magnolia Ave. and Arlington St.	.....	.....
Sacramento		
Sacramento City Emergency Hospital, 6th and H Sts.	6,278	7,091
Sacramento Hospital, Stockton Blvd.	1,053	4,492
San Diego		
San Diego County Dispensary O. P. Dept. San Diego County General Hospital, C and Front Sts.	9,278	10,199
San Francisco		
†Canon Kip Memorial Clinic, 246, 2d St.	1,240	5,004
*Children's Hospital, 3700 California St.	3,071	12,412
Chinese Hospital Clinic, 10 Trenton St.	425	575
†College of Physicians and Surgeons, 344, 14th St.	3,645	13,862
Franklin Hospital, 14th and Noe Sts.	9,330	17,749
French Hospital, Geary St. and 5th Ave.	3,224	6,500
Mary's Help Hospital Clinic, 145 Guerrero St..	2,394	8,064
*Mount Zion Hospital, 2200 Post St.	2,262	22,917
†National Homeopathic Clinic, 173 Haight St....	360	1,656
San Francisco Policlinic and Post Graduate College Hospital, 1535 Jackson St.	6,234	7,430
*Stanford University School of Medicine Dispensary O. P. Dept. Lane Hospital, 2398 Sacramento St.	11,016	78,487
*St. Luke's Hospital, 27th and Valencia Sts...	913	4,205
†Third Street Clinic, 89, 3d St.	1,299	3,560
*University of California Hospital, Parnassus and 2d Aves.	17,729	85,684
San Jose		
Columbia Hospital, Inc., E. Santa Clara St. at 19th	220	650
†Good Cheer Club Clinic, Room 15, Porter Bldg., 2d and Santa Clara Sts.	4,220	13,704
Santa Clara County		
Hospital	1,123	4,446
San Luis Obispo		
†San Luis Obispo Co. Health Center, Garden St.	(No data available)	
San Mateo		
Mills Memorial Hosp...	250	.....
San Pedro		
†San Pedro Emergency Hospital, 203, 6th St....	1,508	2,280
Santa Ana		
†Social Service Dept. of Orange County, 111 E. 3d St.	.....	.....
Santa Barbara		
*Cottage Hospital Dispensary, 3d and Bath Sts.	989	2,883
Scotia		
Scotia Hospital Assn., Inc.	875	3,500
Stockton		
†Stockton City Clinic, 29 S. Sutter St.	607	1,483
Sugar Pine		
†Sugar Pine Hospital..	275	800
Susanville		
Riverside Hospital, Riverside Drive	385	750
Veterans' Home		
Veterans' Home of California Hospital	6,525	14,514
Visalia		
†Tulare County Health Center, W. Main St.....	(New)	
West Orange		
Orange County Hospital	806	1,276
Westwood		
†Westwood Hospital, 500 Elm St.	525	7,300
Totals.....	193,920	599,751

COLORADO

Canon City		
Holmes Hospital, 428 Greenwood St.	315	1,114
Denver		
†University of Colorado School of Medicine Clinic, 1307 Welton St.....	7,439	25,713
Fort Collins		
†Red Cross Clinic....	165	221
Greeley		
†Weld County Clinic, Greeley Hospital	402	605
Pueblo		
†Minnequa Hospital of the Colorado Fuel and Iron Co., Minnequa and Lake Aves.	97,433	117,850
Salida		
Red Cross Hospital, 140 W. 3d St.	1,000	2,500
Totals.....	106,754	148,003

CONNECTICUT

Bridgeport		
†City Dispensary Madison and Washington Aves.	4,746	18,386
Columbus Hospital, Inc., 564 Worthington Ave.	1,600	4,800
Emergency Hospital and Dispensary	6,442	28,570
Danielson		
†Civic Federat'n Health Station, Main St.....	391	1,658
Greenwich		
Greenwich Hospital Assn., Lake Ave.	450	1,245
Hartford		
†City Dispensary, 550 Main St.	(No record)	1,481
†Hartford Dispensary 56 Winthrop St.....	4,500	10,039
New Haven		
*Grace Hospital Dispensary, 1423 Chapel St.	2,562	7,621
†Health Center, City of New Haven, 578 Grand Ave.	3,700	5,514
*New Haven Dispensary, O. P. Dept. New Haven Hospital, 321 Congress Ave	(No record)	43,745
North Grosvenordale		
Emergency Hospital (North Grosvenordale Dispensary)	.....	.....
Putnam		
Day-Kimball Hospital, 75 Pomfret St.	495	798
Sharon		
Sharon Hospital Assn., Inc.	179	895
South Norwalk		
†The Norwalk Dispensary Assn., 6 Pine St...	(No data available)	1,261
Stamford		
Stamford Hospital, Hubbards Hill	172	228
Waterbury		
†Waterbury Dipensary, 35 Field St.	5,772	11739
Totals.....	32,270	136,719

DELAWARE

Lewes		
Beebe Hospital of Lewes, Inc.	(New)	
Marshallton		
Edgewood Sanitarium.	353	2,237
Wilmington		
*Delaware Hospital, 14th and Washington Sts.	7,563	30,612
*Homeopathic Hospital Assn., 1501 Van Buren St.	565	1,898
Physicians and Surgeons Hospital, 802 Adams St.	301	824
Totals.....	8,782	35,571

DISTRICT OF COLUMBIA

Washington		
*Central Dispensary and Emergency Hospital, 1711 New York Ave., N. W.	1,627	5,959
**Children's Hospital of the District of Columbia, 13th and W Sts....	1,225	4,378
*Columbia Hospital for Women and Lying-In Asylum, 25th and L Sts., N. W.	997	2,371
†Dispensary of the 19th St. Baptist Church.	.....	.....
*Eastern Dispensary and Casualty Hospital, 708 Massachusetts Ave., N. E.	687	.....
*Garfield Memorial Hospital, Florida Ave., Opp. 10th St. N. W.....	.....	.....
*Georgetown University Hospital, N and 35th Sts., N. W.	8,350	16,155
*Providence Hospital, 2d and D Sts., S. E....	3,840	13,277
*Sibley Memorial Hospital, 1140 N. Capitol St., N. W.....	1,000	2,967
Washington Sanitarium and Dispensary, 1252, 6th St., S. W.....	4,000	12,000
*George Washington University Hospital, 1339 H St., N. W.....	1,625	3,593
†Woman's Clinic Dispensary, 1237 T St., N. W.	.....	.....
Totals.....	23,351	60,700

FLORIDA

Jacksonville		
†City Free Dispensary, Orange and Main Sts...	10,363	.....
New Smyrna		
Forster Sanatorium ..	1,850	2,042
Tallahassee		
Florida Agricultural and Mechanical College Sanatorium School Grounds	4,000	8,184
Totals.....	16,213	10,226

GEORGIA

Atlanta		
*J. J. Gray Clinic, O. P. Dept. Grady Hospital, 50 Armstrong St.	6,476	37,861
Augusta		
Augusta City Dispensary, O. P. Dept. University Hospital, University Pl.	.....	18,445
Macon		
*Macon Hospital, 820 Pine St.	1,156	2,340

	Patients Last Year	Visits Last Year
Rome		
Harbin Hospital, 100 3d St.	1,077	2,200
Sandersville		
Rawlings Sanitarium.	2,400	9,036
Totals	11,139	69,882
IDAHO		
Lewiston		
White Hospital (Lewiston Hospital Assn.), 1504 Main St.	912	2,751
Totals	912	2,751
ILLINOIS		
Anna		
Hale Sanitarium, 604 S. Main St.	747	1,254
Bloomington		
St. Joseph's Hospital, Jackson St. and Morris Ave.	1,894	27,650
Chicago		
Bethany Sanitarium and Hospital, 3415 W. Van Buren St.	1,040	4,840
Burnside Hospital, 9435 Langley Ave.	1,400	1,750
†Central Free Dispensary, 1744 W. Harrison St.	17,621	99,594
*Chicago Policlinic and Hospital, 221 W. Chicago Ave.	2,700	8,500
**Children's Memorial Hospital Dispensary, 735 Fullerton Ave.	14,390	27,994
†Children's South Side Free Dispensary, 705 W. 47th St.	3,742	20,732
*Cook County Hospital Clinic, Harrison and Wood Sts.	13,819	13,819
[Outpatients are referred to other institutions for treatment.]		
**Dispensary of the Chicago Lying-In Hospital conducted at the Provident Hospital, 36th and Dearborn Sts.	1,131	(No record)
*Grant Hospital, 551 Grant Pl.	2,150	6,455
†Guardian Angel Dispensary, 46th and Gross Ave.	1,444	2,139
†Hahnemann Free Dispensary, 2815 Cottage Grove Ave.	2,985	10,203
*Illinois Central Hospital, 5744 Stony Island Ave.	1,895	5,600
†Illinois Post Graduate Medical School Dispensary, 1844 W. Harrison St.	7,791	14,971
Iroquois Memorial Dispensary, O. P. Dept., Iroquois Memorial Hospital, 23 N. Market St.	7,701	10,809
*Elizabeth Marcy Center Dispensary, O. P. Dept. Wesley Hospital, 1335 Newberry Ave.	3,461	.....
**Maxwell Street Dispensary of the Chicago Lying-In Hospital, 1336 Newberry Ave.	1,027	17,063
*Mercy Clinic, O. P. Dept. Mercy Hospital, 2526 Calumet Ave.	8,947	9,569
*Mount Sinai Hospital, 1519 S. California Ave.	639	1,157
**North Chicago Hospital, 2551 N. Clark St.	1,875	45,625
†Northwestern University Dispensary, 2431 S. Dearborn St.	19,557	37,691
†Olivet Institute Dispensary, 1500 Cleveland Ave.	853	4,585
Peoples Hospital, 253 W. 22d St.	1,200	7,000
*Post Graduate Hospital, 2400 S. Dearborn St.	20,279	20,279
*Provident Hospital, 16 W. 36th St.	1,131	3,399
*Michael Reese Dispensary, O. P. Dept. Michael Reese Hospital, 1612 Maxwell St.	4,719	70,527
**Stock Yards Dispensary of the Chicago Lying-In Hospital, 734 W. 47th St.	179	2,399
†St. Elizabeth's Dispensary, 1360 N. Ashland Ave.	.....	.....
*St. Joseph's Hospital, 2100 Burling St.	1,611	4,662
*St. Luke's Hospital, 1439 Michigan Ave.	1,893	(No record)
*Mary Thompson Hospital of Chicago for Women and Children, 1712 W. Adams St.	3,830	9,943
*University Hospital, 432 S. Lincoln St.	825	4,488
†University of Illinois College of Medicine Clinic, 508 S. Honore St.	5,540	23,983
*Washington Boulevard Hospital, 2449 Washington Blvd.	2,118	8,472
Decatur		
Decatur and Macon Co. Hospital Clinics	286	3,845
Elgin		
†Elgin Community Dispensary, 12 S. Spring St.	445	1,118
Evanston		
*Evanston Hospital, 2650 Ridge Ave.	1,766	4,702
*St. Francis Hospital, 355 Ridge Ave.	1,283	919
La Grange		
La Grange Sanitarium and Hospital, 87 S. 5th St.	480	2,500
Metropolis		
Walbright Hospital.	1,000	5,000
Peoria		
†Public Health Nursing Assn. Dispensary, 206 City Hall	2,746	17,998
Rockford		
Rockford Hospital, 507 Chestnut St.	992	(No data available)
†Rockford Dispensary.	.....	.....
†Rockford Municipal Dispensary, 124 S. Wyman St.	675	2,452
Rock Island		
St. Anthony's Hospital, 767 30th St.	.....	.....
Springfield		
St. John's Hospital, 8th and Mason Sts.	1,219	7,740
Totals	172,572	573,772
INDIANA		
Evansville		
Hayden Hospital, 20 Walnut St.	912	.....
Gary		
†**Gary Hospital of the Illinois Steel Company, Broadway and Calumet River	13,067	38,894
Indianapolis		
†Indianapolis City Dispensary, Market and Senate Sts.	.....	.....
*Indianapolis City Hospital, 10th and Locke Sts.	(New)	
Marion		
†Public Health Clinic, 5th and Adams Sts.	.....	.....
Muncie		
†Muncie Public Health Clinic, 207 N. High St.	527	3,268
Oaklandon		
Sunnyside Sanatorium.	661	1,385
South Bend		
Children's Dispensary and Hospital Assn., 1040 W. Division St.	396	2,021
Terre Haute		
†Rose Dispensary, 7th and Cherry Sts.	350	2,135
Union City		
Union City Hospital.	.....	.....
Totals	15,913	47,703
IOWA		
Ames		
‡Iowa State College Hospital	.....	10,187
Creston		
Greater Community Hospital, 402-4 N. Oak St	957	.....
Des Moines		
†Des Moines Health Center, 1st and Locust Sts.	5,027	14,258
Iowa City		
*University Hospital, Iowa Ave.	5,808	7,302
Mason City		
†North Iowa Clinic, Central Trust Bldg.	.....	.....
Park Hospital Clinic, 102 N. Washington St.	3,000	9,433
Nevada		
Iowa Sanitarium and Hospital	414	(No record)
Oskaloosa		
Mercy Hospital	1,175	2,450
Ottumwa		
Ottumwa Hospital	288	437
Sioux City		
†Dispensary, Organized Welfare Bureau, 209, 3d St.	786	1,930
Waterloo		
†Blackhawk Co. Public Health Assn.	.....	.....
Totals	17,455	45,997
KANSAS		
Halsted		
**Halstead Hospital.	2,481	6,943
Junction City		
†Geary County Health Dept., Courthouse	1,073	1,138
Lawrence		
†Department of Public Health, City Hall.	1,459	3,092
Lebanon		
Lebanon Hospital	397	663
Liberal		
Liberal Hospital.	(1921 records lost)	
Newton		
Axtell Hospital, 207-9 E. Broadway	15,000	18,000
Pratt		
†Pratt Clinic	.....	.....
Rosedale		
*Bell Memorial Hospital, College and Broad Sts.	4,832	21,308
Sabetha		
St. Anthony - Murdock Memorial Hospital, 14th St.	145	(No complete data)
Topeka		
†Municipal Clinics, 3d Floor, City Bldg.	2,019	4,052
Wichita		
†City of Wichita, Kansas Clinic, City Hall.	2,131	5,025
Totals	29,537	60,221
KENTUCKY		
Berea		
Berea College Hospital. (No data available)		
Fleming		
†Fleming Hospital.	.....	.....
Fulton		
†Health Dept. Dispensary	(New)	
Greenville		
†Muhlenberg County Health Dept., Court House	1,200	2,700
Jackson		
Bach Hospital, Main St.	713	4,327
Lebanon		
Elizabeth's Hospital, Main and Harrison Sts.	520	1,560
Lexington		
†Public Health Nursing Assn., 227 N. Upper St.	3,217	6,639
†University of Kentucky Dispensary of Dept. of Hygiene and Public Health	3,737	6,276
Louisville		
Children's Free Hospital, 226 E. Chestnut St.	945	.....
*Louisville City Hospital, Preston and Chestnut Sts.	11,673	48,192
**Pope Sanitarium, 115 W. Chestnut St.	470	35,500
Murray		
William Mason Memorial Hospital, 409 Poplar St.	1,366	3,970
Paducah		
†**Illinois Central Railway Hospital, 1423 Broadway	3,174	3,174
†McCracken County Red Cross Health Center, 531 Broadway	900	1,237
Totals	27,855	113,575

LOUISIANA

	Patients Last Year	Visits Last Year
Alexandria		
Baptist Hospital 327 3d St.	519	.....
Bogalusa		
Elizabeth Sullivan Memorial Hospital	(No record)	18,218
Fisher		
West Louisiana Sanitarium	3,000	18,000
Monroe		
St. Francis Sanitarium L. B. Faulk Free Clinic, 318 Wood St.	882	1,575
New Orleans		
*Charity Hospital of Louisiana, Tulane and Howard Sts.	33,851	113,183
Flint-Goodridge Hospital, 1566 Canal St.	1,981	18,563
†*Illinois Central Railway Hospital, Magnolia and Lafayette Sts.	758	3,790
New Orleans Hospital and Dispensary for Women and Children, 1823 Annunciation St.	2,653	4,154
Presbyterian Hospital of New Orleans, 701-39 Carondelet St.	11,986	.....
*Touro Infirmary and Hebrew Benevolent Assn., 3516 Prytania St.	16,845	78,597
Shreveport		
*Shreveport Charity Hospital, 1240 Texas St.	(New)	
*T. E. Shumpert Memorial Sanitarium, 941 Margaret Pl.	6,100	24,988
Totals	78,575	281,068

MAINE

Bath		
†Bath Health Center, Custom House Bldg.	67	897
Biddeford		
Trull Hospital	1,000	.....
Boothbay Harbor		
St. Andrew's Hospital.	150	350
Dexter		
Plummer Memorial Hospital	150	.....
Old Town		
†Central Penobscot Public Health Assn.	1,103	1,158
Portland		
Children's Hospital, 68 High St.	1,235	11,745
Presque Isle		
Presque Isle General Hospital, 37, 2d St.	239	358
Rockland		
Knox County General Hospital, 2 Maple St.	697	.....
Totals	4,641	14,508

MARYLAND

Annapolis		
Annapolis Emergency Hospital, Franklin and Cathedral Sts.	749	1,717
Baltimore		
†Baltimore General Dispensary, 100 N. Paca St.	6,731	10,220
†Christ Church Dispensary, 602 S. Bond St.	1,200	12,019
†City Medical Agency Dispensary, Eastern District, 1300 E. Baltimore St.	(Included in Report of Southern Dist.)	
†City Medical Agency Dispensary, Northeastern District, 1224 E. Monument St.	(Included in Report of Southern Dist.)	
†City Medical Agency Dispensary, Northwestern District, 2242 Pennsylvania Ave.	(Included in Report of Southern Dist.)	
†City Medical Agency Dispensary, Southern District, 1418 Light St.	5,163	11,755
Dispensary of Volunteers of America Hospital, 418 W. Lexington St.	4,049	10,245
Robert Gerrett Hospital for Children, 27 N. Carey St.	1,660	6,287
*Hebrew Hospital and Asylum, Monument St. and Rutland Ave.	3,370	16,593
**Hospital for Women of Maryland Lafayette Ave. and John St.	569	569
*Johns Hopkins Hospital, Broadway and Monument St.	31,787	142,532
Howard A. Kelly Hospital, 1418 Eutaw Pl.	8,030	11,775
Harriet Lane Home for Invalid Children of the Johns Hopkins Hospital.	3,448	13,909
Locust Point Dispensary, E. Fort Ave. and Haubert St.	4,000	4,423
*Maryland General Hospital, Linden Ave. and Madison St.	2,998	3,641
†Medical and Surgical Dispensary, 1301 Light St.	.....	.....
*Mercy Hospital, Saratoga and Calvert, Sts..	5,739	.....
[Conducted by Medical Dept., Univ. of Maryland and the State Health Dept.]		
Provident Hospital and Free Dispensary, 413-15 W. Biddle St.	1,023	1,410
*South Baltimore General Hospital, 1213-29 Light St.	12,897	17,622
*St. Agnes' Hospital, Wilkens Ave.	706	1,220
*St. Joseph's Hospital, Caroline and Hoffman Sts.	4,946	7,008
*University Hospital, Lombard and Green Sts.	13,071	52,637
Cambridge		
Cambridge Maryland Hospital	1,185	.....
Hagerstown		
†Washington County Public Health Demonstration, 12 E. Washington St.	360	1,679
Havre de Grace		
Havre de Grace Hospital, Union Ave. and Revolution	94	240
Totals	111,775	327,495

MASSACHUSETTS

Boston		
†Berkeley Infirmary Dispensary, 44 Dwight St.	2,066	3,696
*Boston City Hospital, 818 Harrison Ave. (See also Haymarket Square and East Boston Relief Stations)	32,301	164,177
**Boston Dispensary and Hospital for Children, 25 Bennet St.	40,000	152,508
**Boston Floating Hospital, 40 Wigglesworth St. Rox,	608	5,542
**Boston Lying-In Hospital, 24 McLean St.	2,858	8,062
*Carney Hospital, 140 Dorchester St., S. B.	4,222	33,980
**Children's Hospital, 300 Longwood Ave.	11,935	47,338
†Dispensary for Women, 633 Massachusetts Ave.	335	5,214
*Dispensary of the New England Hospital for Women and Children, Columbus Ave. and Dimock St. Rox,	1,063	5,718
*East Boston Relief Station, O. P. Dept., Boston City Hospital, 14 Porter St.	10,312	28,643
*Haymarket Square Relief Station, O. P. Dept., Boston City Hospital, Haymarket Square	22,330	22,330
**Collis P. Huntington Memorial Hospital, 695 Huntington Ave.	1,420	6,820
†Jewish Maternity Clinic Assn., 18 Allen St.	.....	.....
†The Little House Dispensary, 73 A St., S. B.	(New)	
†Lincoln House Dispensary, 80 Emerald St.	3,171	3,412
Long Island Hospital, Long Island	1,360	.....
*Masachusetts General Hospital, Fruit St..	25,302	165,676
*Massachusetts Homeopathic Dispensary, O. P. Dept., Massachusetts Homeopathic Hospital, 750 Harrison St.	13,597	58,209
†Maverick Dispensary, 18 Chelsea St., E. B.	2,269	15,183
†Medical Dispensary and Pharmacy, (Salvation Army), 87 Vernon St., Rox,	.....	.....
Medical Mission Dispensary, 36 Hull St.	3,650	9,894
*Peter Bent Brigham Hospital, 721 Huntington Ave.	7,885	49,545
Plymouth Hospital Dispensary, 12 E. Springfield St.	.....	.....
South End Dispensary and Hospital, 2a Milford St.	.....	2,000
St. Elizabeth's Hospital, 726 Cambridge St., Brighton	3,108	5,063
†Union Rescue Mission, 1-3 Dover St.	.....	.....
†University Dispensary, 415 Newbury St.	.....	.....
Brockton		
*Brockton Hospital, 680 Centre St.	1,290	2,870
Brookline		
†Community Health Center of the Brookline Friendly Society, 10 Walter Ave.	1,324	12,641
**Free Hospital for Women, 365 Pond Ave..	1,470	5,556
Cambridge		
Cambridge City Hospital, 1493 Cambridge St.	1,540	6,000
*Cambridge Hospital, 330 Mount Auburn St.	1,490	6,155
Cambridge Relief Hospital, 199 Prospect St..	5,500	50,000
Middlesex Hospital, 85 Otis St.	1,296	3,519
Chelsea		
*Chelsea Memorial Hospital, 100 Bellingham St.	1,645	.....
†Chelsea Relief Dispensary, 4 Tremont St.	.....	.....
Clinton		
Clinton Hospital Assn., Highland St.	412	676
Concord Junction		
Massachusetts Reformatory Hospital	2,748	.....
Fairhaven		
Fairhaven Hospital, 20 Fort St.	.....	.....
Fall River		
Bay View Hospital, Woodman and Bay Sts..	218	426
†Board of Health Dispensary	2,884	9,014
†City Dispensary, Overseers of the Poor, City Hall	1,803	7,571
*Fall River City Hospital, 228 Stanley St.	5,757	14,284
St. Ann's Hospital, 795 Middle St.	388	388
†Truesdale Clinic, 151 Rock St.	.....	.....
*Union Hospital, 538 Prospect St.	2,039	10,930
Fitchburg		
*Burbank Hospital, Hospital Rd.	600	1,000
Framingham		
Framingham Hospital, Evergreen St.	550	1,074
Gloucester		
†Public Health Dispensary, 132 Main St.	699	2,563
Lawrence		
*Lawrence General Hospital, 60 Prospect St.	1,323	4,839
Lowell		
Lowell City Dispensary, O. P. Dept., City Hospital, City Hall.	2,768	.....
*Lowell Corporation Hospital, Merrimack and Pawtucket Sts.	4,762	17,659
*St. John's Hospital, Bartlett and Fayette Sts.	2,171	10,452
Ludlow		
Lynn Hospital, 212 Boston St.	4,432	13,091
Melrose		
Melrose Hospital Assn., 585 Lebanon St.	410	775
New Bedford		
†New Bedford City Mission Dispensary, 755 1st St.	1,979	.....
*St. Luke's Hospital, Page and Allen Sts.	3,277	7,551
Union Hospital and Dispensary, 1076 Pleasant St.	.....	.....

	Patients Last Year	Visits Last Year
Newburyport		
Anna Jaques Hospital	631	779
Newton		
*Newton Hospital, 2014 Washington St., Lower Falls	320	3,088
Northampton		
Cooley Dickinson Hospital, Locust St.	241	1,837
Pittsfield		
Hillcrest Hospital, 798 North St.	2,910	5,703
*House of Mercy Hospital, 741 North St.	3,179	5,362
Plymouth		
Jordan Hospital, Sandwich St.	309	1,821
Quincy		
†Fore River Hospital, 97 E. Howard St.	.....	.....
Salem		
*Salem Hospital, 81 Highland Ave.	1,450	5,429
Somerville		
Somerville Hospital, 30 Crocker St.	.....	.....
Taunton		
Morton Hospital, 88 Washington St.	1,504	.....
Waltham		
*Waltham Hospital, Hope Ave.	585	1,253
Winchester		
†Winchester Public Health Center, 9 Mount Vernon St.	754	2,739
Worcester		
Belmont Hospital, Belmont St.	299	.....
*City Hospital, 162 Chandler St.	6,962	31,342
†Franco-American Dispensary, 19 Portland St.	.....	.....
Washburn Free Dispensary O. P. Dept. Memorial Hospital, 14 Oak Ave.	5,164	13,798
Totals	268,775	1,055,225

MICHIGAN

Ann Arbor		
University Hospital, Catherine St.	18,012	27,398
Battle Creek		
Battle Creek Sanitarium Clinic, N. Washington Ave.	4,661	.....
Calumet		
Calumet and Hecla Hospital	(No data available)	
Detroit		
Children's Hospital of Michigan, 5224 St. Antoine St.	4,599	19,936
Grace Hospital, 4160 John R. St.	4,192	15,287
Harper Hospital, 3800 John R. St.	26,231	53,319
Michigan Mutual Hospital	.....	32,859
Receiving Hospital, St. Antoine and Macomb Sts.	9,084	12,235
†Red Cross Clinic, 303 Palmer Bldg.	(No record)	2,034
Samaritan Hospital, 2200 W. Grand Blvd.	467	742
St. Mary's Hospital, 1420 St. Antoine St.	6,624	27,917
Woman's Hospital and Infants' Home, 443 Forest Ave. S.	3,219	6,273
Flint		
†Health Center, Board of Health, Rivard Blvd. 607 Beach St.	12,424	24,058
Grand Rapids		
Butterworth Hospital, Michigan St. and Bostwick Ave.	1,010	1,708
St. Mary's Hospital Free Clinic, Cherry and Lafayette Ave.	888	1,648
Grosse Pointe		
†Grosse Pointe Board of Health Rivard Blvd. and Jefferson Ave.	559	614
Hancock		
†Houghton County Dispensary, 100 Quincy St.	247	1,059
Highland Park		
Highland Park General Hospital, Glendale and Lincoln Aves.	1,360	2,394
Iron Mountain		
Westerlin Hospital	1,321	4,015
Iron River		
Mercy Hospital	1,300	5,000
Jackson		
W. A. Foote Memorial Hospital, East Ave.	915	2,792
Kalamazoo		
Baldwin Sanitarium, 500 Monroe St.	8,075	.....
†Dept. of Public Health and Welfare, 122 E. Water St.	1,189	3,970
†Public Health Clinic, Board of Health	386	3,192
Lake Linden		
Lake Superior General Hospital Dispensary, Calumet and Beasley Sts.	(No data available)	
Lansing		
†Health Center, 112 W. Allegan St.	6,508	7,330
Menominee		
St. Joseph Hospital, 802 Ogden Ave.	1,013	.....
Mohawk		
¶Mohawk Mine Hospital, 100 Stanton Ave.	246	14,590
Painesdale		
Copper Range Medical Service, Copper Range Hospital	11,957	30,984
Petoskey		
Petoskey Hospital, 109 W. Lake St.	366	1,180
Pontiac		
†Dept. of Public Health, 97 Perry St.	362	1,397
Totals	127,215	303,931

MINNESOTA

Chisholm		
Rood Hospital, 101 E. Chestnut St.	591	11,800
Coleraine		
†Coleraine Hospital, Morrison Ave.	130	.....
Crosby		
¶Miners Hospital	252	5,475
Duluth		
†Duluth Free Dispensary, 407 W. Superior St.	596	812
Morgan Park Hospital, Morgan Park	3,250	23,364
St. Mary's Hospital, 37th St. and 5th Ave. E.	6,050	8,599
Ely		
Shipman Hospital	4,497	7,773
Eveleth		
More Hospital	8,774	23,825
Hibbing		
Rood Hospital, 2009 4th Ave.	3,551	18,754
Minneapolis		
Maternity Hospital, 2215 Western Ave.	(No record)	1,930
Minneapolis General Hospital, 5th St. Bet. 6th and 7th Aves.	3,510	30,997
University Hospital, Union St., and Washington Ave.	15,647	69,133
†Wells Memorial House Dispensary	.....	.....
Nopeming		
Nopeming Sanatorium	950	2,025
Princeton		
Northwestern Hospital	1,191	....
Proctor		
Missabe Hospital	4,900	9,500
St. Paul		
†St. Paul Dispensary, 204 W. 9th St.	6,260	21,804
Totals	60,150	235,791

MISSISSIPPI

Hattiesburg		
New Methodist Hospital	.....	.....
Laurel		
South Mississippi State Charity Hospital, N. Laurel St.	3,984	10,022
Meridian		
Matty Hersee Hospital, 2310 Poplar Springs Rd.	3,305	.....
Natchez		
Natchez Hospital	8,030	(No Record)
Vicksburg		
Vicksburg Infirmary, 1022 Harrison St.	800	.....
Totals	16,119	10,022

MISSOURI

Columbia		
Boone County General Hospital	(New)	
Parker Memorial Hospital, University of Missouri	2,516	7,318
Joplin		
†Joplin Free Clinic, City Hall 205 Joplin Ave.	4,032	7,331
Kansas City		
†Alfred Benjamin Dispensary, 1000 Admiral Blvd.	4,651	9,916
Children's Mercy Hospital, Independence and Woodland Aves.	8,017	21,905
†Emergency Hospital, City Hall Annex	12,000	(No Record)
†Helping Hand Institute, 523 Grand Ave.	1,436	4,477
Kansas City General Hospital, 24th and Cherry Sts.	5,016	22,608
Kansas City General Hospital Colored Division, 22d and Cherry Sts.	2,083	2,663
Research Hospital, 2300 Holmes St.	1,421	4,025
St. Joseph's Hospital, Linwood and Prospect Sts.	120	400
†Thos. H. Swope Settlement Clinic, 1608 Campbell St.	2,142	11,050
Union Station Hospital, Union Station	1,135	1,812
Poplar Bluff		
Cadwell Hospital	62	1,324
St. Louis		
Alexian Bros. Hospital, 3933 S. Broadway	3,674	21,877
Barnes Hospital, 600 S. Kingshighway	16,442	124,311
†First Aid Station, 110 S. 12th St.	2,065	.....
†Holy Cross Dispensary, 2500 N. 12th St.	2,122	11,356
Jewish Hospital, 5415 Delmar Blvd.	5,614	26,430
St. John's Hospital Dispensary, 312 N. 23d St.	3,600	21,733
St. Louis Baptist Hospital, 912 N. Garrison Ave.	.....	.....
St. Louis Children's Hospital, 500 S. Kingshighway	16,494	126,964
St. Louis City Hospital Dispensary, 1605 S. 14th St.	29,099	67,405
St. Louis Mullanphy Hospital, Montgomery and Bacon Sts.	2,685	14,801
†St. Louis Obstetrical Dispensary, 1235 N. Grand Ave.	225	304
†St. Louis University Dispensary, 1402 S. Grand Ave.	2,150	11,888
St. Mary's Infirmary, 1536 Papin St.	2,172	11,584
Totals	130,973	533,482

MONTANA

Billings		
†Health Dept., Yellowstone County, Babcock Bldg.	817	1,788
Butte		
Murray Hospital, 57 W. Quartz St.	13,356	28,044
St. James Hospital, Idaho and Silver Sts.	2,062	7,588
Great Falls		
†Cascade County Health Dept., Stanton Bank Bldg. Rm. 80.	1,050	1,463
Thompson Falls		
St. Luke's Hospital	250	1,050
Totals	17,535	39,933

NEBRASKA

	Patients Last Year	Visits Last Year
David City		
David City Hospital,..	.....	.....
Hastings		
Nebraska Sanitarium, 315 E. High St.....	313	.....
Lincoln		
Shoemaker's Private Hospital, 1117 L St...	82	440
Norfolk		
†Free General and special Clinic, Verges Sanatorium	.....	.....
Omaha		
†Creighton Dispensary, 306 N. 14th St.....	7,075	21,448
Creighton Memorial St. Joseph's Hospital, 10th and Castellar Sts.....	310	821
†The Solar Sanitarium, 1818 Douglas St.....	5,856	25,962
University of Nebraska Dispensary, O. P. Dept., University Hospital, 42d and Dewey Ave.....	3,555	20,130
Pawnee City		
Pawnee County Hospital	359	(No Record)
Totals	17,550	68,801

NEVADA

Goldfield		
Association Hospital, 721 N. Columbia St.....	188	379
Mason		
Mason Hospital.....	120	.....
Tonopah		
†Tonopah Mines Hospital, 90 South St.....	6,301	16,896
Totals	6,609	17,275

NEW HAMPSHIRE

Hanover		
Mary Hitchcock Memorial Hospital	451	835
Keene		
Elliot Community Hospital, 305 Main St.....	209	475
Whitefield		
Morrison Hospital....	201	934
Totals	861	2,244

NEW JERSEY

Atlantic City		
Atlantic City Hospital, 23 S. Ohio St.....	6,462	10,106
The Waggoner Private Hospital Clinic	.....	.....
Bayonne		
Bayonne Hospital and Dispensary, 12 E. 30th St.	3,277	12,234
Camden		
Cooper Hospital, 6th and Stevens Sts.....	8,385	27,069
Homeopathic Hospital Dispensary, 430 Stevens St.	5,129	12,112
West Jersey Homeopathic Hospital, Mt. Ephriam and Atlantic Ave.	8,603	21,279
Elizabeth		
Alexian Bros. Hospital, 7th and Jersey Sts.....	1,860	.....
Elizabeth General Hospital Dispensary, E. Jersey and Reid Sts.....	3,449	9,036
St. Elizabeth's Hospital, 204 S. Broad St..	1,579	1,825
Englewood		
Englewood Hospital Assn., Child Hygiene Dept.	171	1,861
Franklin		
Franklin Hospital....	2,500	5,500
Hackensack		
Hackensack Hospital, Hospital Ave.	1,063	1,822
†Health Center Clinic, 50 Hudson St.....	1,344	2,171
Jersey City		
Christ Hospital, 176 Palisade Ave.	3,428	4,732
Greenville Hospital in Jersey City, 1825 Boulevard St.	125	198
Jersey City Hospital, Baldwin Ave.	14,476	23,663
St. Francis' Hospital, 25 E. Hamilton Pl.....	3,994	21,613
Long Branch		
Monmouth Memorial Hospital (Wimpfheimer Dispensary)	3,752	8,941
Millville		
Millville Hospital, N. High St.	419	.....
Montclair		
Mountainside Hospital	4,195	4,831
Morristown		
Morristown Memorial Hospital, 66 Morris St.	6,070	25,525
Newark		
The Babies Hospital, 437 High St..	3,838	3,838
City Dispensary, O. P. Dept., City Hospital, Plane and Williams Sts.	13,687	55,785
Hospital for Women and Children, Central Ave. and S. 10th St....	2,509	8,776
Hospital of St. Barnabas, 683 High St.....	2,279	7,561
St. James Hospital Dispensary, Elm and Jefferson Sts.	578	1,088
St. Michael's Hospital Dispensary, High St. and Central Ave.	3,737	28,506
New Brunswick		
Middlesex General Hospital, Somerset Ave.....	(New)	
St. Peter's General Hospital, Somerset and Hardenberg Sts.	1,327	3,220
Orange		
Orange Memorial Hospital, 188 S. Essex Ave.	3,170	10,941
Passaic		
†Free Dispensary, Municipal Bldg.	418	.....
Passaic General Hospital, Lafayette Ave....	2,764	3,498
St. Mary's Hospital, Pennington Ave.	825	1,800
Paterson		
Nathan and Miriam Barnert Hospital, 30th St. and Broadway.....	1,919	5,977
Paterson General Hospital, Market St.....	2,416	6,258
Plainfield		
Muhlenberg Hospital, Park Ave. and Randolph Rd.	2,300	6,319
Princeton		
‡Princeton University Dispensary, Nassau St..	1,594	11,994
Thorofare		
Sanitarium Assn. of Philadelphia (open July and August)	201	244
Trenton		
†City Dispensary, Municipal Bldg., E. State St.	1,959	6,879
McKinley Hospital ..	2,730	3,999
Mercer Hospital, Bellevue Ave.	965	3,383
St. Francis Hospital, Hamilton Ave. and Chambers St.	5,359	9,789
Weehawken		
North Hudson Hospital Assn., Park Ave.....	.....	1,608
Totals	134,856	376,981

NEW MEXICO

Gardiner		
*St. Louis- Rocky Mountain and Pacific Railroad Co. Hospital...	1,500	.....
Total	1,500	.....

NEW YORK

Albany		
Albany Hospital Dispensary, New Scotland Ave.	432	3,115
Anthony N. Brady Maternity Home, 30 N. Main St.	185	925
Homeopathic Hospital Dispensary, 159 N. Pearl St.	1,548	4,157
South End Dispensary of the Albany Hospital, 2 Ash Grove.....	1,775	9,059
St. Peter's Hospital, 879 Broadway	1,253	4,174
Auburn		
†Union Neighborhood House, Health Center, 77 Wall St.....	1,000	2,278
Binghamton		
Broome County Humane Society Free Dispensary, 71-73 Collier St.	2,342	4,684
Bronxville		
Lawrence Hospital Dispensary, Pondfield Rd...	284	533
Brooklyn		
†Bay Ridge Clinic, 5208 4th Ave.....	(Included in Report Health Dept.N.Y.C.)	
†Bedford Clinic, 420 Herkimer St.	(Included in Report Health Dept.N.Y.C.)	
Beth Moses Hospital, 404 Hart St.....	(New)	
†Bradford St. Dispensary, 109 Bradford St.	.....	.....
†Brooklyn City Dispensary, 11 Tillary St..	927	3,892
†Brooklyn Eastern District Homeopathic Dispensary, 194 S. 3d St...	2,451	5,899
Brooklyn Hospital Dispensary, 121 Dekalb Ave.	19,563	81,431
Brooklyn Samaritan Hospital 608, 4th Ave.	1,726	3,137
†Brownsville Clinic, 64 Pennsylvania Ave.....	(Included in Report Health Dept.N.Y.C.)	
Brownsville and East New York Hospital Dispensary, Rockaway Pkway and Ave. A.....	.....	.....
†Bushwick and East Brooklyn Dispensary, 1097 Myrtle Ave.....	3,727	8,149
Coney Island Hospital, Ocean Pkway and Ave. Z	1,964	3,745
Cumberland Street Hospital Dispensary, 109 Cumberland St.	5,848	13,333
†Day Camp Rutherford Clinic, Ft. of Broadway	(Included in Report Health Dept.N.Y.C.)	
†Dietz Memorial Clinic of the Italian Baptist Church, 18 Jackson St..	408	984
Dispensary of the Jewish Hospital of Brooklyn, Cor. Classon and St. Mark's Aves...	20,132	21,140
†Eastern District Clinic, 306 S. 5th St.....	(Included in Report Health Dept.N.Y.C.)	
Greenpoint Hospital, Kingsland Ave., and Bullion St.	4,715	13,552
†Hebrew Ladies' Dispensary of Williamsburgh, 84 Cook St.....	.....	.....
Kings County Hospital Clarkson Ave....	2,965	8,745
Long Island College Hospital Dispensary, 340 Henry St.	19,564	80,955
Lutheran Hospital, E. New York Ave., Cor. Powell St.	11,392	31,640
†Memorial Dispensary for Women and Children, 827 Sterling Pl..	224	1,138
Methodist Episcopal Hospital, 7th St., and 8th Ave.	2,916	7,867
Norwegian Lutheran Deaconess Home and Hospital, 4th Ave., and 46th St.	2,618	2,859
†Prospect Clinic, Fleet and Willoughby Sts.....	(Included in Report Health Dept.N.Y.C.)	
†Ridgewood Clinic, 753 Onderdonk Ave.	(Included in Report Health Dept.N.Y.C.)	
Sar Shalom Dispensary of the Williamsburg Mission to the Jewish, 27 Throop Ave.	2,302	5,186
St. Catherine's Hospital, 133 Bushwick Ave	5,341	11,296
St. Christophers Hospital for Babies, 277-283 Hicks St.	806	3,148
United Israel - Zion Hospital Dispensary, 10th Ave., 48th and 49th Sts.	3,816	7,597
Victory Memorial Hospital, 7th Ave. and 92d St.	311	573
Williamsburgh Hospital, 106-112 S. 3d St..	3,635	7,563
Wyckoff Heights Hospital of Brooklyn, 142 St. Nicholas Ave.....	1,951	4,491
Buffalo		
Buffalo City Hospital, 462 Grider St..... (Including report of 8 Health Centers and O. P. Dept. of Wende Hospital)	35,790	189,832
Emergency Hospital of the Sisters of Charity, Pine and Eagle Sts.....	3,974	7,491
†Health Center Free Dispensary No. 1, 379 Amherst St.	(Included in Report of Buffalo City Hospital O.P. Dept.)	

	Patients Last Year	Visits Last Year
†Health Center Free Dispensary No. 2, 591 William St.	(Included in Report of Buffalo City Hospital O.P.Dept.)	
†Health Center Free Dispensary No. 3, 1122 Genesee St.	(Included in Report of Buffalo City Hospital O.P.Dept.)	
†Health Center Free Dispensary No. 4, 404 Seneca St.	(Included in Report of Buffalo City Hospital O.P.Dept.)	
†Health Center Free Dispensary No. 5, 51 Court St.	(Included in Report of Buffalo City Hospital O.P.Dept.)	
†Health Center Free Dispensary No. 6, 24 High St.	(Included in Report of Buffalo City Hospital O.P.Dept.)	
†Health Center Free Dispensary No. 7, 122 Hodges Ave. (special)	(Included in Report of Buffalo City Hospital O.P.Dept.)	
†Health Center Free Dispensary No. 8, 462 Grider St.	(Included in Report of Buffalo City Hospital O.P.Dept.)	
Ernest Wende Hospital, Broadway and Spring Sts.	(Included in Report of Buffalo City Hospital)	
Cohoes		
Cohoes Hospital, 221 Main St.	327	1,447
Corning		
†City Clinic, City Hall	316	580
Corona		
†Corona Clinic, 127 46th St.	(Included in Report Health Dept.N.Y.C.)	
Dobbs Ferry		
Dobbs Ferry Hospital, Ashford Ave.	200	493
Dunkirk		
†Dunkirk Public Health Center, 510 Deer St.	444	2,050
Elmira		
†Elmira City Dispensary, 425 E. Market St.	440	3,558
Flushing		
Flushing Hospital and Dispensary, Parsons and Forest Aves.	2,910	6,822
Geneva		
†Health Office, City Hall	297	.....
Hornell		
†Hornell Health Center, 108 Broadway	426	1,307
Jamaica		
†Jamaica Clinic	(Included in Report Health Dept.N.Y.C.)	
Kingston		
Kingston City Hospital, 296 Broadway	155	424
Lackawanna		
Moses Taylor Hospital, Ridge Rd.	422	4,345
Long Island City		
†Queens Plaza Clinic, 138 Hunter Ave.	(Included in Report Health Dept.N.Y.C.)	
St. John's Long Island City Hospital Dispensary, 12th St., and Jackson Ave.	3,290	8,814
Mount Pleasant		
Grasslands Hospital	243	1,056
Mount Vernon		
Mount Vernon Hospital, N. 7th Ave.	1,152	3,732
Newburgh		
St. Luke's Hospital, 70 DuBois St.	249	522
New Rochelle		
New Rochelle Hospital Dispensary, 16 Guion Pl.	635	1,911
New York		
Babies' Hospital of the City of New York, 657 Lexington Ave.	4,410	16,034
Beekman Street Hospital, 117 Beekman St.	16,388	30,821
Bellevue Hospital Dispensary, 425 E. 26th St.	50,006	138,937
†John E. Berwind Free Maternity, 127 E. 103d St.	1,008	3,181
Beth David Hospital Dispensary, 1830 Lexington Ave.	10,371	19,258
Beth Israel Hospital Assn., 70 Jefferson St.	67,380	76,074
†Bloomingdale Clinic, 227 W. 99th St.	5,095	5,610
Booth Memorial Hospital Dispensary, 314 E. 15th St.	528	1,498
†Bowling Green Neighborhood Assn., 45 West St.	2,464	3,618
Broad Street Hospital Dispensary, 127-29 Broad St.	10,122	26,122
Bronx Hospital Dispensary, 1285 Fulton Ave.	16,024	39,007
†Chelsea Clinic, 307 W. 33d St.	(Included in Report Health Dept.N.Y.C.)	
†Christ Church House, 344 W. 36th St.	136	217
Columbus Hospital, 226 E. 20th St.	3,402	10,001
Community Hospital, 17-21 W. 101st St.	1,066	6,872
†Corlears Clinic, 331 Broome St.	(Included in Report Health Dept.N.Y.C.)	
†Day Camp Manhattan, Ft. E. 90th St.	(Included in Report Health Dept.N.Y.C.)	
†East Harlem Health Center, 345 E. 116th St.	14,550	52,198
†East Side Clinic for Children, 325 E. 84th St.	5,828	7,000
Fordham Hospital Dispensary, Southern Blvd. and Crotona Ave.	703	1,754
French Hospital, 450 W. 34th St.	2,207	17,366
†Good Samaritan Dispensary, 75 Essex St.	41,993	115,825
Gouverneur Hospital, Gouverneur Slip and South St.	92,020	107,154
†Grace Chapel Dispensary, 414 E. 14th St.	282	2,950
Hahnemann Hospital, 657 Park Ave.	132	583
Harlem Hospital, 136th St. and Lenox Ave.	27,154	79,547
†Harlem Reformed Church Dispensary, 180 E. 122d St.	5,497	.....
†Health Center No. 1, 206 Madison St.	.....	.....
†Health Dept., 505 Pearl St. (Including report of 21 separate clinics)	69,802	144,877
Italian Dispensary, O. P. Dept. Italian Hospital, 617 E. 83d St.	4,412	11,173
Jewish Maternity Hospital, 270 E. Broadway	1,097	3,479
†Judson Mem. Health Center, 243 Thompson St.	1,506	5,240
Knickerbocker Hospital, 503 W. 131st St.	8,980	12,889
Lebanon Hospital Dispensary, Cauldwell and Westchester Aves.	15,720	33,430
Lincoln Hospital and Home, 320 Concord Ave.	8,290	19,739
Lutheran Hospital of Manhattan, 341 Convent Ave.	2,408	.....
Manhattan Maternity and Dispensary, 327 E. 60th St.	1,523	14,885
†Mott Haven Clinic, 493 E. 139th St.	(Included in report Health Dept.N.Y.C.)	
Mount Sinai Hospital Dispensary, 1 E. 100th St	53,416	173,682
New York City Children's Hospital, Randall's Island	1,988	25,000
†New York Dispensary, 34 Spring St.	35,853	119,698
New York Homeopathic Medical College and Flower Hospital, 450 E. 64th St.	3,293	16,358
New York Hospital, 8 W. 16th St.	14,914	85,605
New York Infirmary for Women and Children, 321 E. 15th St.	8,766	27,837
New York Nursery and Child's Hospital, 161 W. 61st St.	5,042	21,399
New York Post-Graduate Medical School and Hospital, 303 E. 20th St.	67,836	227,015
†North Eastern Dispensary, 222 E. 59th St.	10,799	22,306
†Northern Dispensary, Waverly Pl. and Christopher St.	4,979	10,332
†North-Western Dispensary, 403 W. 36th St.	462	3,080
Anna Ottendorfer Dispensary, O. P. Dept., Lenox Hill Hospital, 76th St. and Park Ave.	25,080	72,933
Presbyterian Hospital, 41 E. 70th St.	26,589	107,898
Reconstruction Hospital, 395 Central Park, W.	444	21,490
†Riverside Clinic, 481 W. 145th St.	(Included in report Health Dept.,N.Y.C.)	
Roosevelt Hospital, 428 W. 59th St.	30,757	69,711
Sloane Hospital for Women, Amsterdam Ave. and 59th St.	14,914	85,605
St. Luke's Hospital, 114th St. and Morningside Drive	23,184	95,264
St. Mark's Hospital, 175, 2d Ave.	8,664	23,763
St. Vincent's Hospital of the City of New York, 11th St. and 7th Ave.	5,851	12,273
†Stuyvesant Clinic, 540 E. 13th St.	(Included in report Health Dept.,N.Y.C.)	
†Stuyvesant Polyclinic of the City of New York, 137, 2d Ave.	16,516	37,614
†Tremont Clinic, 3d Ave. and St. Paul's Pl.	(Included in report Health Dept.,N.Y.C.)	
†Trinity Dispensary, 209 Fulton St.	679	1,904
University and Bellevue Hospital Medical College Dispensary, 338 E. 26th St.	22,632	82,836
†Vanderbilt Clinic and Day Camp, 15 Amsterdam Ave.	36,449	174,955
†Washington Clinic, 128 Prince St.	(Included in report Health Dept.,N.Y.C.)	
West Side Dispensary and Hospital, 328 W. 42d St.	37,528	81,010
Wilkes Dispensary of St. Mary's Free Hospital for Children, 435-439, 9th Ave.	4,211	15,416
Woman's Hospital in the State of New York, 141 W. 109th St.	5,222	27,247
†Yorkville Clinic, 439 E. 57th St.	(Included in report Health Dept.,N.Y.C.)	
Niagara Falls		
†Bureau of Health, 598 Pine Ave.	2,097	2,698
Oneonto		
Aurelea Osborn Fox Memorial Hospital	779	5,542
Oswego		
†Oswego City Health Center, 252 W. 1st St.	739	2,054
Poughkeepsie		
Samuel W. Bowne Memorial Hospital, Pendall Road	500	1,000
†Dept. of Health, 24 Washington St.	2,348	2,946
Vassar Bros. Hospital, Reade Pl.	893	3,625
Rochester		
†Baden Street Dispensary, 160 Baden St.	3,759	16,727
Rochester General Hospital, 501 W. Main St.	3,753	18,528
Rochester Homeopathic Hospital, 224 Alexander St.	1,777	6,439
Rome		
Oneida County Hospital, Floyd Ave., R.F.D. No. 4	1,148	1,148
Schenectady		
†Day Nursery Free Dispensary, 25 Lafayette St.	1,137	2,233
†Health Center, 508 Union St.	1,968	6,902
Staten Island		
†Richmond Clinic, Bay and Baltic Sts., Stapleton	(Included in report Health Dept.,N.Y.C.)	
St. Vincent's Hospital Dispensary, Bard and Castleton Aves., West New Brighton	403	1,783
Staten Island Hospital, Castleton Ave., Tompkinsville	2,061	3,933
Syracuse		
†Syracuse Free Dispensary, 610 E. Fayette St.	5,267	27,639
Troy		
Samaritan Hospital, Peoples and Burdette Aves.	2,095	2,906
The Troy Hospital Assn., 87 Oakwood Ave.	1,958	2,543
Utica		
†Utica Dispensary, 224 Mary St.	2,056	11,644
White Plains		
†Board of Health, City of White Plains, 45 Hamilton Ave.	857	2,204
Yonkers		
St. John's Riverside Hospital (Sherman Dispensary), Ashburton Ave.	4,790	15,806
St. Joseph's Hospital, S. Broadway and Yark Sts.	2,721	6,131
Yonkers Homeopathic Hospital and Maternity, 127 Ashburton Ave.	1,378	2,404
Totals	1,182,818	3,439,038

NORTH CAROLINA

	Patients Last Year	Visits Last Year
Asheville		
Highland Hospital, Inc.	191	.....
Fayetteville		
Highsmith Hospital ...	940	3,832
Lincolnton		
Lincolnton Hospital...	.....	.....
Morganton		
Grace Hospital Dispensary, King St.	624	1,437
New Bern		
St. Luke's Hospital, Broad and George Sts...	1,359	7,428
Raleigh		
†Wake County Free Clinic, 15 W. South St..	771	1,408
Wilmington		
†Free Clinic, Court House	963	4,122
Winston-Salem		
†City Health Dept., Main and 1st Sts.....	1,400	2,950
†Lawrence Clinic, Inc., 719 Oak St.	700	1,728
Totals	6,948	22,905

NORTH DAKOTA

Grand Forks		
St. Michael's Hospital, Lewis Blvd.	153	204
Jamestown		
Trinity Hospital	700	.....
Totals	853	204

OHIO

Akron		
†Dept. of Public Health, City Bldg.	14,885	47,272
Cambridge		
Lawrence Hospital, 614 Clark St.	.....	.....
Canton City		
†Canton City Clinic, Auditorium Bldg., 5th St., N.W.	1,179	4,054
Celina		
Otis Hospital, E. Market St.	.....	.....
Cincinnati		
†Cincinnati Polyclinic, 1411 Race St.....	1,800	.....
†Eclectic Medical College Clinic, 630 W. 6th St.	2,160	7,228
Jewish Hospital, Burnett Ave.	2,563	26,501
†Ranley Health Center, 129 E. 9th St.....	2,795	3,441
†University of Cincinnati Medical College Clinic, Cincinnati General Hospital, Goodman and Burnett Aves.	9,349	36,069
†Wilhelm and Gette Backman Dispensary, 729 W. 6th Ave.	5,868	10,011
Cleveland		
Babies' Dispensary and Hospital, 2500 E. 35th St.	23,520	25,917
Fairview Park Hospital, 3305 Franklin Ave.	(New)	
Huron Road Hospital Society, Huron Rd., below 9th St.	3,458	6,330
Lakeside Hospital and Western Reserve University, Lakeside Ave. and 12th St.	.....	106,520
Lakewood Public Hospital Dispensary, 12611 Madison Ave.	821	2,924
Maternity Hospital and Western Reserve University, 3735 Cedar Ave....	3,708	40,042
Mount Sinai Hospital, 1800 E. 105th St.....	.....	45,886
St. Alexis Hospital, 5163 Broadway, S.E.....	1,336	2,248
St. Luke's Hospital, 6606 Carnegie Ave.	15,284	.....
St. Vincent's Charity Hospital, E. 22d St. and Central Ave., S.E.....	13,575	49,798
Columbus		
Children's Hospital, Miller and Fair Ave.....	6,073	.....
†Columbus Free Dispensary, 222 E. Long St.	1,202	2,636
State Street Dispensary, Ohio State University, 315 E. State St.....	2,020	9,302
University Homeopathic Hospital, 11th and Neil Aves.	11,463	.....
Dayton		
Miami Valley Hospital, Apple St.	2,366	5,783
St. Elizabeth's Hospital, Hopeland St.....	3,114	3,650
Hamilton		
†Clinic, Health Dept., Front and Ludlow Sts...	654	2,169
Port Clinton		
Pool Hospital, 125 E. 3d St.	(No data available)	
Portsmouth		
Schirrmann Hospital, 731, 8th St.	4,000	4,500
Ravenna		
†County Board of Health and Red Cross Clinic	548	.....
Springfield		
Springfield City Hospital, York and Clifton Sts.	1,720	2,979
Toledo		
†City Dispensary, 503 N. Erie St.	(No data available)	
Maternity and Children's Hospital, 1609 Summit St.	(No record)	
St. Vincent's Hospital, 2213 Cherry St.....	805	3,521
†Toledo District Nurse Assn. Dispensary, 1903 Monroe St.	2,001	4,243
Toledo Hospital, 1711 Cherry St.	440	2,200
Van Wert		
Van Wert County Hospital, Central Ave. and Chestnut St.	485	542
Youngstown		
St. Elizabeth's Hospital, 1026 Belmont Ave.	576	894
Youngstown Hospital Assn., Francis St.	1,037	4,953
Totals	140,805	461,613

OKLAHOMA

Muskogee		
†Muskogee Public Health Assn., 525 Court St.	.....	.....
Oklahoma		
State University Hospital, 401 E. 2d St.....	2,352	16,214
Sulphur		
Sulphur Hospital Sanitarium	(New)	
Totals	2,352	16,214

OREGON

Portland		
†Portland Free Dispensary, 276, 4th St.....	9,290	16,351
Sellwood General Hospital, 575 Harvey Ave..	1,495	1,667
The Dalles		
The Dalles Hospital..	2,020	4,250
Totals	12,805	22,268

PENNSYLVANIA

Allentown		
Allentown Hospital, 17th and Chew Sts.....	1,948	6,995
Sacred Heart Hospital, 4th and Chew Sts.....	1,014	2,176
Altoona		
Altoona Hospital, Howard Ave. and 7th St....	3,504	11,842
Mercy Hospital, 2601, 8th Ave.	.....	2,039
Ashland		
State Hospital for Injured	2,421	7,107
Beaver Falls		
Providence Hospital, 3d Ave. and 9th St.....	109	208
Bellevue		
Suburban General Hospital, Jackson St.	175	.....
Bloomsburg		
Bloomsburg Hospital..	194	245
Blossburg		
Blossburg State Hospital	1,225	6,125
Bryn Mawr		
Bryn Mawr Hospital Dispensary, Bryn Mawr Ave.	1,371	5,187
Carlisle		
Carlisle Hospital, South and Wilson St.....	653	.....
Chambersburg		
Chambersburg Hospital, Lincoln Way, E.....	100	254
Chester		
Chester Hospital, 9th and Barclay Sts.....	3,979	5,158
J. Lewis Crozer Homeopathic Hospital, Upland Ave.	838	3,779
Clearfield		
Clearfield Hospital, Turnpike Ave.	782	2,690
Coaldale		
State Hospital	1,991	11,917
Columbia		
Columbia Hospital, 7th and Poplar Sts.....	158	362
Confluence		
Frantz Hospital, Logan Pl.	654	2,675
Easton		
Easton Hospital, 660 Wolf Ave.	2,188	3,381
Erie		
†State and Municipal Clinic, 510 State St....	1,336	6,638
St. Vincent's Hospital, 24th and Sassafras Sts..	1,366	2,134
Germantown		
Germantown Dispensary and Hospital, 640 E. Pennsylvania St....	5,480	20,336
Greensburg		
Westmoreland Hospital Assn., 700 W. Pittsburg St.	703	4,993
Harrisburg		
Harrisburg Hospital, Front and Mulberry Sts.	8,077	15,341
Harrisburg Polyclinic Hospital, Front and Harris Sts.	781	1,288
Hazleton		
State Hospital of Middle Coal Field, E. Broad St.	968	3,720
Heilwood		
Penn-Mary Hospital (Bethlehem Steel Compan)	.....	.....
Johnstown		
¶Cambria Steel Company Hospital, Lowman St.	18,115	52,788
Kingston		
Nesbitt West Side Hospital, 562 Wyoming Ave.	.....	.....
Lancaster		
Lancaster General Hospital, 530 N. Lime St....	559	2,369
St. Joseph's Hospital, College and Marietta Aves.	549	3,113
Lebanon		
Good Samaritan Hospital Dispensary, 4th and Walnut Sts.	118	522
Lebanon Sanatorium, 4th and Willow Sts.....	444	.....
McKeesport		
McKeesport Hospital, 1500, 5th Ave.	441	3,307
Monongahela		
Memorial Hospital Association of Monongahela, Chess St.	190	268
Mount Pleasant		
Jacob Justice Free Dispensary, O. P. Dept. Mount Pleasant Memorial Hospital, 727 Main St...	218	453
Nanticoke		
State Hospital of Nanticoke, Washington St...	2,366	.....
Norristown		
Montgomery Hospital, Powell and Basin Sts...	302	490
Palmerton		
Palmerton Hospital....	2,478	13,233
Philadelphia		
American Hospital for Diseases of the Stomach, 1809 Wallace St.	617	4,893
Babies' Hospital of Philadelphia, 334 S. 9th St.	1,709	8,528
Amy S. Barton Dispensary, O. P. Dept. Hospital of Woman's Medical College of Pennsylvania, 335 Washington Ave.....	4,374	12,447

	Patients Last Year	Visits Last Year
†Chestnut Hill Dispensary, 8815 Germantown Ave.	.....	.....
Children's Homeopathic Hospital, Franklin and Thompson Sts.	4,495	15,285
Children's Hospital of the Mary J. Drexel Home, 2100 S. College Ave.	4,417	.....
Children's Hospital of Philadelphia, Bainbridge and 18th Sts.	8,226	26,786
Diagnostic Hospital of Philadelphia, 1731 Vine St.	4,805	5,135
Frankford Hospital, Frankford Ave. and Wakeling St.	2,426	9,118
Frederick Douglas Memorial Hospital, 1530 Lombard St.	.....	.....
Garretson Hosp., 18th and Hamilton Sts.	2,479	4,091
Germantown Dispensary and Hospital, Penn St., near Chew	3,451	15,363
Hahnemann Medical College and Hospital, 15th St., above Race	8,579	32,267
†Health Department of Girard College	.....	.....
†Henry Phipps Institute, 7th and Lombard Sts.	3,247	11,343
Hospital of the Protestant Episcopal Church in Philadelphia, Front St. and Lehigh Ave.	22,194	80,110
Hospital of the University of Pennsylvania, 3400 Spruce St.	20,443	88,675
Hospital of the Woman's Homeopathic Assn. of Pennsylvania, 20th St. and Susquehanna Ave.	2,870	14,881
Hospital of the Woman's Medical College of Pennsylvania, 2121 N. College Ave.	2,860	10,889
Howard Hospital, 801 S. Broad St.	6,251	26,076
Jefferson Maternity Dispensary, 2545 Wharton St.	(Included in report of Jefferson Medical College Hosp.)	
Jefferson Maternity Hospital, 224 S. 7th St.	(Included in report of Jefferson Medical College Hosp.)	
Jefferson Medical College Hospital, 10th and Sansom Sts.	32,929	114,655
Jewish Hospital Assn. of Philadelphia, 5500 Old York Road	4,584	15,821
Kensington Hospital for Women, 132-36 Diamond St.	946	4,737
Lankenau Hospital, Girard and Corinthian Aves.	5,309	30,288
Medico - Chirurgical Hospital of Philadelphia, 18th and Cherry Sts.	12,156	25,141
Mercy Hospital, 5000 Woodland Ave.	733	1,452
Methodist Episcopal Hospital, S. Broad and Wolf Sts.	7,496	28,005
Misericordia Hospital, 54th St. and Cedar Ave.	3,928	15,654
Mount Sinai Hospital, 1429 S. 5th St.	16,562	53,450
Northeastern Hospital of Philadelphia, E. Allegheny and Tulip Sts.	5,311	17,197
†Northern Dispensary of Philadelphia, 608-10 Fairmount Ave.	3,270	6,259
Northwestern General Hospital, 2017-21 N. 22d St.	.....	4,924
Pennsylvania Hospital, Dept. for Sick and Injured, 8th and Spruce Sts.	15,425	55,190
†Philadelphia Dispensary, 127 S. 5th St.	19,863	56,826
Philadelphia General Hospital, 34th and Pine Sts.	1,243	9,109
Philadelphia Lying-In Charity Hospital, 126 N. 11th St.	1,682	.....
Polyclinic Hospital, 1818 Lombard St.	22,711	76,936
Presbyterian Hospital in Philadelphia, 51 N. 39th St.	7,171	36,311
Samaritan Hospital 3401 N. Broad St.	3,841	19,049
Southeastern Dispensary and Hospital for Women and Children, 736 S. 10th St.	1,200	2,600
†Southern Dispensary, 318 Bainbridge St.	3,696	12,561
St. Agnes' Hospital, 1900 S. Broad St.	20,048	60,436
St. Christopher's Hospital for Children, N. W. Cor. Lawrence and Huntington Sts.	3,331	12,941
St. Joseph's Hospital, 16th St. and Girard Ave.	7,408	20,765
St. Luke's Homeopathic Hospital, 4414-50 North Broad St.	8,342	77,038
St. Mary's Hospital, Franklin and Palmer Sts.	8,494	19,683
St. Timothy's Memorial Hospital Dispensary, Ridge and Jamestown Aves.	828	3,278
Stetson Hospital of Philadelphia, 1745 N. 4th St.	6,773	21,260
West Philadelphia Hospital for Women, 4035 Parish St.	2,009	6,332
West Philadelphia General Homeopathic Hospital and Dispensary, 1234 N. 54th St.	4,867	.....
Woman's Hospital of Philadelphia, N. College and 22d Sts.	19,957	(No record)
Woman's Southern Homeopathic Hosp., 733-745 S. Broad St.	1,124	3,060
Philipsburg		
Cottage State Hospital	606	2,348
Pittsburgh		
Allegheny General Hospital, 110 E. Stockton Ave.	7,830	18,793
Children's Hospital, Forbes St. and McDevitt Place	3,983	.....
Homeopathic Medical and Surgical Hospital Dispensary of Pittsburgh, 5230 Center Ave.	3,401	10,415
Mercy Hospital, Pride and Locust Sts.	4,000	14,703
Montefiore Hospital Assn. of Western Pennsylvania, 3000 Center Ave.	(No record)	2,700
Passavant Hospital, Reed and Roberts Sts.	3,352	11,804
†Pittsburgh Free Dispensary, 43 Fernando St.	1,569	3,722
†Pittsburgh Hospital, Franktown Ave. and Washington Blvd.	494	811
Presbyterian Hospital, Montgomery and Sherman Aves.	2,627	5,101
South Side Hospital, S. 20th, Mary and Jane Sts.	3,167	8,824
St. Francis Hospital, 45th St., near Penn Ave.	4,421	10,870
St. John's General Hospital, 3339 McClure Ave.	2,930	3,337
St. Joseph's Hospital and Dispensary, 2117 Carson St.	2,613	5,209
University Maternity Dispensary, O. P. Dept. Elizabeth Steel Magee Hospital, Forbes and Halket Sts.	553	4,050
Western Pennsylvania Hospital, 4800 Friendship Ave.	8,321	22,565
Pittston		
Pittston Hospital Dispensary	702	2,320
Pottstown		
Homeopathic Hospital	155	467
Pottstown Hospital, 729 N. Charlotte St.	790	1,747
Pottsville		
Pottsville Hospital, Mauch Chunk and Jackson Sts.	340	1,318
Reading		
Homeopathic Medical and Surgical Hospital, 135 N. 6th St.	3,012	4,704
Reading Hospital, Front and Spring Sts.	3,778	6,389
St. Joseph's Hospital, 1215 Walnut St.	3,136	5,638
Ridley Park		
Taylor Hospital Dispensary	346	1,117
Rochester		
Rochester Hospital, 500 Pumey St.	285	825
Sayre		
Robert Packer Hospital, S. Wilbur Ave.	6,204	19,373
Scranton		
Hahnemann Hospital, 316 Colfax Ave.	379	784
†Medical Clinic, 333 Adams Ave.	1,488	2,176
Moses Taylor Hospital.	4,585	39,021
State Hospital of the Northern Anthracite Coal Region of Pennsylvania, 410 Franklin Ave.	4,278	14,718
West Mountain Sanatorium, 203 Linden St.	.....	.....
West Side Hospital.	752	1,302
Shamokin		
Trevorton, Shamokin and Mt. Carmel State Hospital, R.F.D. No. 1.	2,407	5,221
South Bethlehem		
St. Luke's Hospital, Ostrum St.	381	1,048
Spangler		
Miner's Hospital	966	.....
West Chester		
Homeopathic Hospital of Chester County	150	214
Wilkes-Barre		
†Medical Clinic, 184 S. Washington St.	7,303	16,468
Mercy Hospital, 196 Hanover St.	879	4,467
Wilkes-Barre City Hospital, N. River and Auburn Sts.	692	1,377
Wyoming Valley Homeopathic Hospital, 149 Dana St.	150	344
Williamsport		
Williamsport Hospital, Campbell and Louisa Sts.	641	812
Windber		
Windber Hospital, Somerset Ave.	17,246	50,000
York		
York Hospital and Dispensary, College Ave. and Oak Lane	2,051	2,551
Totals	537,438	1,689,512

RHODE ISLAND

Newport		
Newport Hospital Friendship St.	1,135	1,492
Pawtucket		
Memorial Hospital, Prospect St.	1,850	11,461
Park Place Hospital, Park Pl.	922	2,202
Providence		
Homeopathic Hospital of Rhode Island, 62-64 Jackson St.	504	2,289
Lyria Brown Nickerson House Providence City Hospital, 121 Delaine St.	3,004	7,835
†North End Dispensary, 49 Orms St.	1,394	3,247
Providence City Hospital, Eaton St.	5,482	25,712
Providence Lying-In Hospital, 96 State St.	793	1,175
Rhode Island Hospital, 593 Eddy St.	7,871	36,242
St. Joseph's Hospital, Broad St.	2,502	6,780
Riverpoint		
†Federal Hill House Assn., 400 Atwell's Ave.	6,562	28,621
†Pawtuxet Valley Visiting Nurse Assn. Clinic, Allen St.	1,562	10,204
Woonsocket		
Woonsocket Hospital, 115 Case Ave.	200	600
Totals	33,781	137,860

SOUTH CAROLINA

Charleston		
Roper Hospital, Lucas and Calhoun Sts.	9,235	13,821
Columbia		
†Columbia Children's Clinic, 401 Gervais St.	2,697	6,035
Columbia Hospital, 2000 Hampton Ave.	2,182	3,600
South Carolina Baptist Hospital, 1519 Marion St.	2,063	.....

	Patients Last Year	Visits Last Year
Greenville		
Emma Moss Booth Memorial Hospital, Vardry Heights	3,624	.....
Spartanburg		
†Mary Black Clinic, E. Main St.	1,227	2,750
Totals	21,028	26,206

SOUTH DAKOTA

Chamberlain		
Chamberlain Sanitarium and Hospital	(No data available)	
Deadwood		
St. Joseph's Hospital, Charles St.	215	750
Lead		
Homestake Hospital, 214 W. Main St.	.....	42,705
Sioux Falls		
†Sioux Falls Medical and Surgical Clinic, 303 S. Minnesota Ave.	7,799	23,386
Sisseton		
Powell Hospital	1,474	.....
Watertown		
Bartron Hospital Clinic	1,655	4,368
Webster		
†Peabody Clinic	.....	.....
Totals	11,143	71,209

TENNESSEE

Chattanooga		
†Chattanooga General Clinic, City Hall	9,288	.....
Newell and Newell Sanitarium, 707 Walnut St.	3,025	27,791
Knoxville		
Knoxville General Hospital	1,200	1,500
†Knoxville Health Center, Locust and Clinch Sts.	3,500	12,851
Memphis		
Memphis General Hospital, Madison Ave.	13,311	46,193
Nashville		
Geo. W. Hubbard Hospital, 1117, 1st Ave. S.	285	513
Millie E. Hale Hospital, 523, 7th Ave. S.	1,108	1,297
Nashville City Hospital, Nance and Filmore Sts.	4,000	9,920
Vanderbilt University Hospital Free Dispensary, 700 5th Ave. S.	.....	9,339
Totals	35,717	109,404

TEXAS

Arlington		
Knights Templar Hospital, Keystone Stop	300	363
Austin		
Austin City Hospital, 14th and Sabine Sts.	(No data available)	
Dallas		
Baylor Hospital, 3315 Junius St.	3,316	8,740
St. Paul's Sanitarium, 3121 Bryan St.	(New)	
El Paso		
†El Paso County Dispensary, 1st and Campbell Sts.	4,510	13,548
Fort Worth		
†Fort Worth Welfare Assn. Clinic	3,645	5,886
Galveston		
John Sealy Hospital, 816 Avenue B.	.....	18,318
Houston		
Municipal Hosp., City Hall	7,148	18,483
Marlin		
The Torbett Sanatorium, 317 Coleman St.	2,743	4,441
Orange		
Frances Ann Lutcher Hospital, Pine and 2d Sts.	(New)	
San Antonio		
Robt. B. Green Memorial Hospital, 515 Morales St.	6,346	17,049
St. Luke's Clinic, 745 W. Houston St.	1,408	3,227
Waco		
Colgin Hospital and Clinic	.....	.....
Providence Sanitarium, Vermont and N. 18th Sts.	144	303
Totals	29,560	90,358

UTAH

Logan		
Utah Idaho Hospital	1,265	.....
Salt Lake City		
†Community Clinic and Dispensary, 149 Regent St.	789	2,253
County Hospital, 21st and S. State Sts.	1,300	3,024
Salt Lake City Emergency Hospital, 105 S. State St.	1,631	.....
Totals	4,985	5,277

VERMONT

Barre		
City Hospital	708	.....
Burlington		
†Burlington Free Dispensary, 106-8 Pearl St.	1,213	5,445
Mary Fletcher Hospital, 121-27 Colchester Ave.	1,300	.....
Proctor		
Proctor Hospital	292	1,575
Totals	3,513	7,020

VIRGINIA

Alexandria		
Alexandria Hospital, Washington and Duke.	1,087	.....
†Venereal Dis. Clinic and General Clinic for City Poor, N. Fairfax St.	1,346	4,896
Charlottesville		
†University of Virginia Dispensary	.....	4,353
Danville		
†Danville Health Dept.	2,948	3,682
Lynchburg		
Bureau of Health O. P. Dept. Lynchburg Hospital, 205, 10th St.	1,168	6,818
Norfolk		
Hospital of St. Vincent de Paul, Wood and Church Sts.	4,524	9,599
†Kings Daughters Children's Clinic, 300 W. York St.	4,421	6,978
†Norfolk City Free Clinic and Dispensary, Academy Square and Court St.	18,000	.....
Norfolk Protestant Hospital, Raleigh and College Aves.	.....	3,207
Richmond		
†Medical College of Virginia Free Dispensary, 12th and Clay Sts.	4,563	28,347
Virginia Hospital, 11th and Clay Sts.	6,780	3,000
Roanoke		
Lewis Gale Hospital, Inc., 419 Roanoke St. S. W.	917	4,940
†Roanoke Visiting Nurse Assn. and Dispensary, Municipal Bldg.	2,114	8,273
University		
University of Virginia Hospital	.....	4,353
Totals	47,868	88,446

WASHINGTON

Aberdeen		
Aberdeen General Hospital	1,143	.....
Centralia		
Lee A. Scace Hospital, 701 H St.	.....	.....
Hoquiam		
Hoquiam General Hospital, 606 K St.	2,880	8,381
Port Angeles		
Port Angeles General Hospital	150	375
Seattle		
†Roosevelt Clinic, 1114 Boylston Ave.	.....	13,993
†The Seattle Clinic, Joshua Green Bldg.	(No data available)	
Seattle City Hospital and Municipal Clinics, Public Safety Bldg., 4th and Yesler Way	.....	20,921
Spokane		
†Medical Clinic, City Hall	791	15,820
Totals	4,964	59,490

WEST VIRGINIA

Bluefield		
St. Luke's Hospital, 51 Bland St.	1,150	.....
Charleston		
Salvation Army Hospital, 612 Virginia St.	349	1,027
Davis		
Allegheny Heights Hospital	.....	.....
Fairmont		
Fairmont Hospital No. 3, Guffey and Columbia Sts.	350	.....
Huntington		
Greater Huntington Hospital	468	1,578
Kessler-Hatfield Hospital	.....	.....
Martinsburg		
Shenandoah Valley Sanatorium, 506 W. John St.	(No data available)	
Spencer		
West Virginia Methodist Episcopal Hospital	.....	1,585
Welch		
Welch Hospital No. 1.	305	.....
Wheeling		
Ohio Valley General Hospital, 2000 Eoff St.	802	5,134
Totals	5,009	7,739

WISCONSIN

Beloit		
Dr. Newman's Sanitarium, 1511, 5th St.	.....	.....
†Visiting Nurse Assn Clinic, 422 Public Ave.	1,094	3,775
Eau Claire		
Sacred Heart Hospital	650	.....
Green Bay		
†Health Center, City Hall	882	1,152
Madison		
University Clinic, Dept. of Clinical Medicine, University of Wisconsin, 762 Langdon St.	6,579	40,692
†Marquette Dispensary Clinic, 4th and Reservoir Ave.	2,397	15,198
Milwaukee Children's Hospital, 219 10th St.	3,024	9,909
Milwaukee County Dispensary, O. P. Dept., Milwaukee County Hospital of Wauwatosa, 160 5th St.	29,833	45,292
Milwaukee Infants' Hospital, 477 Bradford Ave.	598	.....
Milwaukee Maternity and General Hospital, 830 Sycamore St.	1,295	7,000
Roosevelt General Hospital, 573 Class St.	307	669
St. Mary's Hospital, 448 Lake Drive.	469	2,889
Platteville		
Wilson Cunningham Hospital, Main and Chestnut Sts.	15,000	23,000
Superior		
St. Mary's Hospital, Clough Ave. and Broadway	745	.....
Totals	62,733	149,576

WYOMING

Casper		
†Medical Clinic, City Hall	326	1,500
Thermopolis		
Hopewell Hospital	.....	.....
Wheatland		
Wheatland Hospital	1,825	3,220
Totals	2,151	4,720

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SATURDAY, AUGUST 5, 1922

DISPENSARY SERVICE IN THE UNITED STATES

We publish this week statistics based on an extensive survey of the dispensaries, outpatient departments, clinics and other medical institutions having to do with the care and treatment of ambulatory patients. The figures are based on reports received from the superintendents, medical directors or other executives of the dispensaries or in connection with governmental dispensaries from the municipal, state or national officers of these institutions. The figures, therefore, were obtained from official sources and are reliable. Our acknowledgments are due to all who have cooperated toward the success of the survey. Valuable assistance was received from the officers of national health agencies, hospital associations and voluntary medical organizations having to do with ambulatory patients. Hearty cooperation was received also from several of the state hospital committees.

NUMBER OF DISPENSARIES IN THE UNITED STATES

Information is published in regard to 3,243 institutions from which reports were received and which are known to exist. Statements from reliable sources indicate that there are several hundred others for many of which the names have been obtained but from which repeated requests have failed to bring reports which would enable us to include them in our published lists. Even as we go to press reports from other institutions continue to come in; a conservative estimate indicates that the total number of dispensaries in the United States will exceed 4,000. Satisfactory information has not been obtainable from many institutions for the reason that clinic and office record systems are lacking.

Of the 3,243 dispensaries listed, 946 are outpatient departments of hospitals or independent dispensaries which provide general medical and surgical service for their patients, while 2,297 are special dispensaries, such as those for tuberculosis and venereal diseases; mental hygiene and baby and child hygiene clinics; dispensaries of eye, ear, nose and throat and orthopedic hospitals; dispensaries connected with industrial plants, and offices and stations of the United States Public Health Service.

DISPENSARIES PROVIDING GENERAL CARE FOR THEIR PATIENTS

Statistics published this week deal mainly with the more important group of outpatient departments, or those which provide for the general, medical and surgical care of patients. There are 946 of these institutions, including 689 outpatient departments of general hospitals and 257 independent dispensaries. A list of these institutions is published in which are given the name and address of each dispensary and its location, the total number of patients cared for during the last fiscal year, and the number of visits made by those patients during that time. Similar information regarding special dispensaries such as those for tuberculosis, venereal disease and mental hygiene, is being prepared for publication in the near future and the full report of the survey is to be made available in pamphlet form.

GENERAL DISPENSARIES BY STATES

One of the tables published gives the distribution of general dispensaries by states. Of the 946, New York State has the largest supply, 163, followed by Pennsylvania with 136, Massachusetts with 74, California with 56, and Illinois with 48. In regard to the numbers of patients cared for, New York naturally leads with 1,182,818, followed by Pennsylvania with 537,438; Massachusetts with 268,775; California with 193,920, and Illinois with 169,872. Of the 3,872,345 patients attending the general dispensaries, 2,717,850, or 70 per cent., attended dispensaries in the fifty largest cities. In New York, of the 1,182,818 dispensary patients, 958,622, or 81 per cent., are in New York City.

GENERAL DISPENSARIES IN THE FIFTY LARGEST CITIES

Table 3 of the statistics shows that, of the 946 general dispensaries, 416, or 44 per cent., are located in the fifty largest cities. New York leads with sixty-nine, followed by Philadelphia with fifty-four, Chicago with thirty-three, Boston with twenty-seven, and Baltimore with twenty-two. As to the number of patients cared for, New York leads with 958,622, followed by Philadelphia, with 356,680; Boston, with 189,692; Chicago, with 159,493, and Baltimore, with 109,387. Reports from the dispensaries of Seattle and Indianapolis do not give the total number of patients treated during the year.

SERVICE RENDERED BY GENERAL DISPENSARIES

The importance of general dispensaries to the public is indicated by the fact brought out in the statistics that these 946 institutions handled 3,872,345 patients during the year who, during that time, made 11,798,887 visits. Including a reasonable estimate for the seventy-five general dispensaries known to exist but from which

reports are not received, these figures would be increased to 4,500,000 patients and 13,500,000 visits.

SERVICE RENDERED BY SPECIAL DISPENSARIES

Reports received from special dispensaries show that although on the average they cared for smaller numbers of patients, at the same time the patients, as a rule, made larger numbers of visits. An estimate for the 2,297, based on definite reports which were received from the majority, indicates that these institutions cared for a total of 3,750,000 during the year who, during that time, made approximately 16,000,000 visits.

The total number of patients in all dispensaries during the year, therefore, was approximately 8,000,000 who, during the same time, made approximately 29,500,000 visits to those institutions.

DISPENSARY PROBLEMS

One of the live problems relating to dispensaries is the abuse of such service by patients who are able to employ physicians. Investigation indicates that this abuse is not so extensive as has been supposed. The problem is being solved by a careful investigation of the financial status of patients, which is being done by many dispensaries through a cooperation with bureaus of charity which keep a register of the financial status of those seeking financial assistance.

Another problem is the establishment of a schedule of fees for the various services rendered by the dispensary and varying in accordance with the extent of the services rendered. A large number of dispensaries have already established such schedules, but there is no uniformity among dispensaries in the fixing of such charges. There is, also, an evident lack of justice to the patient and of economy to the dispensary in the disproportionate charges for different services in the same dispensary, such, for example, as a charge of ten dollars for roentgen-ray examination, with no charge for a Wassermann test. The next few years will doubtless see much progress in regard to the fixing of reasonable fees so that a larger proportion of the expense of conducting the dispensary can be borne by the patients.

Another problem which in recent years has been given extensive discussion is that of the pay clinics. The object of such clinics is to enable patients who cannot afford to pay the fees charged by physicians to secure satisfactory medical and surgical service at lower rates. Such clinics will be instruments of great good if they accept only such patients as are referred to them by physicians or who are found, on investigation, to be unable to pay full fees. In this way the pay clinic will work in cooperation, and not in competition, with the medical profession.

GROWTH IN NUMBER OF DISPENSARIES

The first dispensary on record [1] was established in London, England, in 1696, to provide medical care for the poor. The first established in the United States was in Philadelphia, in 1786; the second, in New York, in 1790, and the third in Boston, in 1796. We find no record of any survey of dispensaries having been made until that by the United States Census Bureau in 1910; at that time there were only 574, including both general and special dispensaries. An estimate in 1916 placed the number at 900.[1] The present survey gives definite information in regard to the existence of 3,243 dispensaries, not including several hundred others in regard to which there appears to be authoritative evidence regarding their existence but from which thus far it has been impossible to obtain reports. Including the latter, the total would be more than 4,000.

The increase in population in the country has had some influence on the development of outpatient dispensaries, but the chief stimulus, especially in recent years, has been the increasing popularity of the dispensary as a place to secure satisfactory medical service. It has been during recent years also that dispensaries have established well-organized medical staffs and have required their prompt and regular attendance. In addition to this, there has been an increasing tendency toward the establishment of graduated scales of fees by which those who were unwilling to accept charity at the free dispensaries are more willing to patronize the institutions. Another influence leading to the increase in numbers is the recognition by hospitals of the importance of outpatient departments as a means of better serving the people in their communities. It is found that many hospital patients during convalescence can secure the necessary follow-up treatment as ambulatory patients of the outpatient departments.

1. Davis and Warner: Dispensaries, New York, 1918.

THE BLOOD DURING WATER TRANSPORT

The remarkable constancy in the composition of the important tissues and fluids within the organism must excite a never-failing interest in any one who studies the fundamental physiologic processes. Regulatory functions are continually being brought into play to secure the uniformity referred to. The various adjustments and adaptations evidently acting to secure a proper arterialization of the blood under the changing condition of atmosphere and tissue needs for oxygen have often been cited in THE JOURNAL. An equally effective regulation seems to occur in connection with the behavior of water in the body. The variations in intake may be very large, the amount and paths of the output may also show large irregularities depending on a number of unlike circumstances; yet in health the water balance of the body seems to result in a distribution of the "universal solvent" that averts undue concentrations or dilutions wherever an opportunity for the intervention of water may arise.

No adequate explanation has ever been offered as to how the large quantities of water often consumed can be taken care of without upsetting the normal

equilibrium within the organism. Profuse secretion of dilute urine follows the ingestion of liberal quantities of water by mouth. As much may be passed in an hour as is ordinarily voided in a day. As Rowntree [1] has recently pointed out, the inference is that water is absorbed; the absorption results in hydremia, which in turn brings about diuresis. If this reasonable supposition were true, one would expect in the blood pronounced changes, for a time at least, which might become the stimulus for the compensatory kidney functions, just as an accumulation of carbon dioxid in the blood leads to respiratory changes designed to eliminate the excess of the waste product.

Studies of the blood during active water transport have yielded discordant results. It might be expected that something significant would be disclosed in the extreme types of this movement as they occur in chronic polyuria, in which it is known that from 15 to 25 liters of urine a day may be excreted. Yet cases of diabetes insipidus investigated by Christie and Stewart [2] at the Lakeside Hospital, Cleveland, show how trifling the changes in the concentration of the blood plasma, as regards the electrolytes, may be when great changes in the ingestion, excretion and transportation of water are in progress. So far as their experience goes, it would seem that it is only in exceptionally favorable circumstances that even minute changes in the conductivity of the serum, a quantity susceptible of being measured to so considerable a degree of accuracy, can be detected with certainty. For example, blood specimens obtained immediately before and immediately after a long period of complete deprivation of water (twenty-four hours or more) showed no definite differences in the electrical conductivity of the serum which could be associated with changes in the rate at which water was being absorbed, transported and excreted. The same thing was true of the percentage volume of serum. Comparison of blood specimens procured within half an hour, and again after five or six hours, after the resumption of water drinking, with the specimens obtained just before or just at the end of the period of water deprivation, also revealed differences in the conductivity of the serum so slight and so inconstant that it was impossible to connect them definitely with changes in the intake of water.

These facts do not contradict the possibility of some changes in the relative volume of plasma and corpuscles or in the total volume of the circulating fluid, even though its osmotic pressure and the concentration of the electrolytes remain the same. The problem of changes in the tissue water under such conditions, however, looms large. Rowntree [3] has described symptoms attributable to "water intoxication" occurring without significant changes in body temperature, edema or marked increases in plasma volume. They resemble the symptoms of clinical uremia in many respects, and raise the question as to the possible relation of water intoxication, if any exists, to uremia, eclampsia and epilepsy. At any rate, the blood and kidneys no longer deserve sole consideration in the future analysis of the problem of water balance and transport in the organism.

1. Rowntree, L. G.: The Water Balance of the Body, Physiol. Rev. **2**: 116 (Jan.) 1922.
2. Christie, C. D., and Stewart, G. N.: Study of Some Cases of Diabetes Insipidus, with Special Reference to the Detection of Changes in the Blood When Water Is Taken or Withheld, Arch. Int. Med. **29**: 555 (May) 1922.
3. Rowntree, L. G.: Water Intoxication, J. A. M. A. **78**: 1840 (June 10) 1922.

A RECONSIDERATION OF AUTOLYSIS AS A VITAL PROCESS

Some years ago the medical literature was full of articles on autolysis; this process was invoked to explain so many unexplained phenomena that it became almost as much of a catchword as "endocrines" now is. Attention seemed to be diverted from the subject after a time, and only a few pathologists and biochemists have continued investigating this phenomenon. The tumult and the shouting having now faded well away, it is interesting to consider what has survived of it all, and what significance is now attached to autolysis.

The importance of autolysis in the disintegration of dead tissues has never been questioned since Martin Jacoby's classical experiments, and this function seems now to be established beyond dispute. The problem that has more agitated investigators is the part played by autolysis in physiologic processes and in normal metabolism. It seems reasonable to assume that a property so well-nigh universal as autolysis must have been developed to meet some more common situation than the removal of dead tissues, especially since the capacity of cells for autolysis varies quantitatively rather closely with their metabolic activity. A consideration of this topic by Bradley [1] presents a matured analysis from the biochemical standpoint, and gives us a basis for a new consideration of the significance of autolysis in medicine.

As almost inevitably is the case, the introduction of new methods has cast a new light on the old problem, and our education in respect to the essential importance of the H-ion concentration in biologic processes has made it necessary to discard much of what had formerly been learned concerning autolysis, and to revalue the rest. Wiener, and later Bradley and his associates especially, have shown that autolysis depends absolutely on acidity; for when tissues have their normal H-ion concentration, which is essentially the same as that of the blood, no autolysis can take place. Whenever the circulation within a tissue is stopped, whether within the body or on its removal from the body, acidity begins to increase because of continued metabolism

1. Bradley, H. C.: Autolysis and Atrophy, Physiol. Rev. **2**: 415 (July) 1922.

under asphyxial conditions, which leads to an accumulation of organic acids that cannot be completely destroyed because of lack of oxygen. When this acidity has developed to a certain degree, autolysis begins, and its rate is largely determined by the degree of acidity that develops, the optimal reaction being slightly on the acid side of neutrality ($p_H = 6.0$).

Therefore we are justified in assuming that autolysis may play its part even in living tissues if their acidity ever develops sufficiently; and Bradley is evidently of the opinion that sometimes this must happen, for he attributes to autolysis a rôle in many pathologic processes, and also some that are essentially physiologic. Perhaps one of the best examples is furnished by the changes that follow poisoning with some of the organic halogen derivatives. Evarts Graham secured evidence that the necrosis of the liver that may be produced by chloroform depends on the decomposition of the drug within the cell, liberating hydrochloric acid, which kills the cells and is followed by the rapid autolysis characteristic of acute yellow atrophy of the liver, a condition resembling the chloroform necrosis liver. The war gases furnished much unwelcome support of this theory, for most of them, such as phosgen, "mustard gas" and chlorpicrin, are organic chlorin compounds which readily penetrate cells and hydrolyze to produce concentrations of acid that kill the cells and lead to rapid autolysis.

Numerous atrophies, without such definite necrosis of tissues as in the foregoing examples, may also be attributed to autolysis resulting from an increased intracellular acidity from asphyxia of greater or less degree. Atrophy of the mammary gland after lactation is a typical physiologic example of autolysis resulting from diminution of the blood supply. Leaving the gland partly distended with milk hastens the atrophy through pressure, which cuts down the blood supply still more. After parturition, the mammary glands in some women produce an excessive secretion of milk, and become tense with pressure and often painful. This great initial pressure regularly leads to a diminution through atrophy so that within a few days the supply of milk diminishes automatically, and the common practice of bandaging the breasts to terminate lactation depends on a similar principle. In general acidosis and in fevers, the loss in tissue mass is correlated probably with acidotic changes within the tissue cells, leading to their partial autolysis. The wastage in anemias seems also to be related to the decreased oxygen supplied the tissues, causing partial asphyxia, which permits autolysis to produce a new equilibrium between the mass and metabolism of the tissues of the body and their supporting blood and oxygen supply. In starvation we have a striking example of slow autolysis by which a very large portion of the proteins of the body is digested and thus mobilized for the use of the more essential organs. It is evident that the tissues least subject to autolysis in starvation are those whose blood supply is most assured, the brain and the heart. This slow autolysis is probably related to blood supply and tissue acidosis, as in the other cases mentioned. The histologic changes of starvation are in many respects similar to those of autolysis. Among other observations possibly bearing on the same question are those of Hildebrandt, who found that autolysis in the functioning mammary gland is much more active than in the resting gland; and of Schlesinger, who found that autolysis was at its maximum (in rabbits) in new-born animals, decreasing rapidly in the first few months of life, and that in conditions associated with emaciation the rate of autolysis varied directly with the degree of emaciation. The very slow generalized atrophies of advancing age are probably also related immediately to a blood supply growing gradually less efficient, and leading to a concomitant decrease in the mass of tissues maintained in equilibrium with it. These are only a few of the more obvious examples of physiologic and pathologic processes in which autolysis has a part. Every loss of tissue mass that is not merely due to loss of water probably involves this mechanism. It is also of corroborative significance that such observations as have been made on conditions that favor growth of cells indicate that for this function an increase in alkalinity is of importance.

All the foregoing evidence indicates that autolysis is a phenomenon that is demonstrable only in pathologic conditions, or in physiologic conditions of atrophy, but does not establish that the responsible enzymes either do or do not play a part in normal protein metabolism.

Current Comment

IS THE BILE CONCERNED IN PANCREATITIS?

Scientific investigation finds a justification not only in furnishing new information and consequent deductions to enrich our knowledge, but also not infrequently in dispelling long accepted fallacies or superstitions. An instance of the latter has recently been offered by the studies of Mann and Giordano [1] on the anatomy and functions of the bile duct. The entrance of bile into the pancreatic duct has repeatedly been charged with responsibility for the production of pancreatitis. Mann and Giordano have ascertained, however, that the anatomic relation of the biliary and pancreatic ducts at the duodenum in man is such that obstruction at the exit could rarely if ever permit bile to pass toward the pancreas. Furthermore, the sphincter is located at a point at which contraction will close both ducts and will not convert them into a continuous channel. Even when a reflux of bile into the pancreatic duct is artificially brought about, the infiltration of the pancreas with the sterile secretion of the liver apparently fails to

1. Mann, F. C., and Giordano, A. S.: The Bile Factor in Pancreatitis, Proc. Soc. Exper. Biol. & Med. **19**: 353 (April) 1922.

produce acute pancreatitis. Finally, bile has been found in the pancreatic duct without the corresponding occurrence of the inflammatory reaction. Hence, Mann and Giordano assert that we must look elsewhere than to a bile factor for the explanation of the genesis of most cases of pancreatitis.

COLOSTRUM AS A SOURCE OF IMMUNE SUBSTANCES FOR THE NEW-BORN

There are evidences of the existence of certain types of immunity in animals—and presumably also in man—very soon after birth. The immense advantage of such early protection against bacterial dangers early in life is obvious. How it is acquired has not yet been clearly ascertained; but there is no doubt that substances capable of conferring immunity are demonstrable in the blood of the young at a period before it is likely that a new formation of the "immune bodies" could have taken place to any considerable extent. Recently the part played by the colostrum in this phenomenon has been elucidated by investigations on cattle at the Rockefeller Institute at Princeton, N. J. Little and Orcutt [1] found that the blood of new-born calves before ingesting colostrum did not contain agglutinins against *Bacillus abortus*, but that after the intake of agglutinin-containing colostrum the blood acquired a titer related to the agglutinin content of the colostrum. Howe [2] has further shown that certain of the blood proteins are missing in the new-born until after the calves have ingested colostrum containing these globulins. It now appears that the agglutinins are associated with these globulin fractions of the proteins of the blood and colostrum; and their absorption by young animals tends to support the idea of direct absorption, into the blood of the new-born, of certain protein fractions present in colostrum.[3] The mode in which early immunity may be acquired thus becomes evident; and the importance of colostrum in the nutrition of the new-born is emphasized anew.

ON GROWING FOREVER

A single strain of connective tissue cells isolated from a fragment, less than 1 cubic millimeter in size, of the heart of a chick embryo by Carrel at the Rockefeller Institute for Medical Research in 1912 has now passed through nearly nineteen thousand generations in vitro. The growth of the tissue fragments is as rapid today as at any other time during the ten years, each piece generally doubling its volume in two days. If it had been practicable to allow the tissues to multiply to their greatest possible extent, their mass today would be more than that of the sun. These facts, taken from a recent account by Ebeling,[4] fortify the conclusion, to which reference has been made in THE JOURNAL on previous occasions, that such cells, like other forms of protoplasm, seem to be potentially immortal. Given a suitable supply of food material, the cells continue young indefinitely, provided the environment does not become oppressive, as may be the case when the products of destructive metabolism are not properly removed or when inhibitory substances are introduced. Some biologists have assumed that organisms are endowed with a limited capacity to transform energy. On this hypothesis, life does not become prolonged beyond the time when the individual's quota of energy has been metabolized; and this is usually represented by the characteristic life span of the species. The chick cells have now been carried through multiplications by absorption and transformation of their environmental tissue juices year after year beyond the usual limit of life of chickens. Hence it may be assumed that the fibroblasts can proliferate indefinitely without any rejuvenative influences other than food. Growing old involves environmental factors.

1. Little, R. B., and Orcutt, Marion L.: J. Exper. Med. **35**: 161 (Feb.) 1922.
2. Howe, P. E.: J. Biol. Chem., **49**: 115 (Nov.) 1921.
3. Orcutt, Marion L., and Howe, P. E.: The Relation Between the Accumulation of Globulins and the Appearance of Agglutinins in the Blood of New-Born Calves, Proc. Soc. Exper. Biol. & Med. **19**: 331 (April) 1922.
4. Ebeling, A. H.: A Ten Year Old Strain of Fibroblasts, J. Exper. Med. **35**: 755 (June) 1922.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Hospital News.—Col. Charles E. Forbes, director of the U. S. Veterans' Bureau, recently toured California in search of a suitable site for a $3,500,000 tuberculosis hospital for veterans of the World War. The proposed plans call for a 500 bed unit and the use of 250 acres of ground. Construction work will be started within ninety days following the selection of a site.——An addition will be erected at Fabiola Hospital, Oakland, at an estimated cost of $200,000.——It has been announced by the Sisters of Providence Hospital, Oakland, that a large site has been purchased for a new hospital building which will be erected in a few months at a cost of $700,000.——A new industrial building will be erected at the state hospital at Imola and construction work has been started on the workers' cottages. The installation of laundry equipment amounting to $10,000 will also be carried out.——A new maternity ward will be erected at St. Vincent's Maternity Home, Hollywood.——The capacity of the Letterman General Hospital, San Francisco, division for disabled veterans of the World War, has been enlarged from 250 to 400 beds by order from Washington, D. C.

CANAL ZONE

Epidemic of Fever.—It was recently announced that an epidemic of malaria has developed among Canal Zone employees. The Panama *Star* and the *Herald* are quoted to the effect that breeding places of mosquitoes, which had been sprayed with oil the year round, are now neglected and "there are now more mosquitoes on the isthmus than ever before, since sanitation days." These same papers state that the Ancon Hospital is overcrowded with malaria patients.

CONNECTICUT

Typhoid Carrier on Farm.—Through the efforts of the state department of health, cooperating with the local health officers, a man working on a farm in Connecticut has been found to be a typhoid germ carrier. Milk has been produced for sale on the farm in question and six cases of typhoid fever have apparently resulted from its use. The finding of the health officers is the result of numerous examinations made in the laboratory of the state department of health in New Haven. The carrier, who had typhoid in 1895, has been prohibited from handling food of any kind for distribution.

New Hospital Addition.—Work will soon be started on the new buildings for the Newington Home Corporation at Hartford, a state institution for the care and treatment of

crippled children. The legislature at its last session provided $200,000 for such buildings. Physicians in the city of Hartford donate their services to the institution free.——Ground has been cleared for the addition to the New Britain General Hospital at New Britain, which will be erected in the near future at a cost of $500,000. Final plans have been approved and the contracts will be awarded early this month, it was announced. The present New Britain Hospital has a capacity of 100 beds.

DELAWARE

Organization of Health Board.—The board of health of Dover has been reorganized with Dr. L. August H. Bishop as president; Dr. Edwin S. Anderson, vice president, and Herman C. Taylor, secretary-treasurer.

DISTRICT OF COLUMBIA

Jewish Hospital in Washington.—Architect Harry A. Brandt of Washington has been retained to draw plans for the new Hebrew Hospital and Home for the Aged, to be located at the capital. Buildings for the institution will cost $400,000. Two, three and four story buildings will be erected, the materials being brick and limestone.——The general contract for a new addition to the Children's Hospital in Washington has been awarded to W. E. Monney of that city. The building will be a one-story structure, 36 by 25 feet, of brick construction.

GEORGIA

Physician Honored.—The board of trustees of the University of Georgia have conferred on Dr. Lamartine G. Hardman, Commerce, the honorary degree of doctor of science.

Marriage Relations Bill.—Women of Georgia are leading in the fight in the legislature to promote the passage of the bills to come before the present session of the general assembly, especially the marriage relations bill. This measure, which all the state organizations of women favor, proposes that the man should be examined before a marriage license is granted, but that it is not essential that the woman be subjected to examination.

New Activities of Health Board.—The Georgia State Board of Health entered a new field of activity for negroes, July 3, when it conducted a health institute for the teachers attending the summer session of the Fort Valley High and Industrial School, Atlanta, under the direction of Dr. Bocker. The institute was conducted by local physicians and members of the staff of the state health board, in an effort to train the colored teachers in bettering health conditions in their communities. Moving pictures and individual consultations were also arranged.

ILLINOIS

Meeting of Tuberculosis Workers.—Medical, social and financial problems of tuberculosis were discussed at a conference held in Ottawa, July 27-28, under the direction of the Illinois Tuberculosis Association. More than 100 delegates, composed largely of trustees of county tuberculosis sanatoriums, field workers, public health nurses and representatives of all the associations engaged in fighting tuberculosis in sixty counties of the northeastern section of the state, attended the conference.

Big Program for Physicians.—Members of the medical societies of eleven nearby counties and their families were invited to attend an open meeting and picnic at Lowell Park, Dixon, July 19, by the Ogle and Lee County medical societies. The picnic was the largest gathering of medical men held in that section for many years, members of Carroll, Stephenson, Boone, Winnebago, DeKalb, LaSalle, Bureau, Jo Daviess, Kane, Henry and Whiteside County medical societies attending. A baseball match was held between Ogle and Lee counties. Dr. Julius H. Hess, professor of pediatrics, University of Illinois College of Medicine, spoke on "Newer Phases of the Nutrition of Infants," and other papers were read by Dr. Malcolm L. Harris, professor of surgery, Chicago Polyclinic, and Dr. Ernest E. Irons, associate professor of medicine at Rush Medical College, Chicago.

Chicago

Bust of Dr. Black for London University.—U. S. Ambassador Harvey, at the request of President Walter Dill Scott of Northwestern University, will present a bust of Dr. Green Vardiman Black, dean of Northwestern University Dental School, who died in 1915, to the London (England) University. Dr. Black was known as "the father of modern dentistry, and dental pathology and bacteriology."

University News.—Dr. Frederick Robert Zeit, for more than twenty years professor of pathology at Northwestern University Medical School, at his own request has been relieved of active duty in the medical school. He plans to spend next year abroad.——The Pathological Museum of Northwestern University will hereafter be known as the Frederick Robert Zeit Museum of Pathology.——Dr. Charles B. McGlumphy has been appointed assistant professor of pathology at Northwestern University medical School. Dr. McGlumphy has been working with Stoerk at the Franz Joseph Spital in Vienna for the past two years.

INDIANA

Herb Doctor Fined.—A newspaper report states that Leo M. Wolf, who advertised himself as an Indian herb doctor, pleaded guilty to the charge of practicing medicine without a license, when arraigned in the city court at Lafayette, July 15. Wolf was warned by the court to refrain from further attempts to practice medicine unlawfully, and was fined $35.

Poster Contest for Hospital.—In order to raise funds to complete the $2,000,000 building fund for the erection of the James Whitcomb Riley Memorial Hospital in Indianapolis, a state-wide poster contest has been instituted, the winning posters to be used as aids to collect funds. Prizes of $150 in gold and three original paintings by Howard Chandler Christy, Franklin Booth and Frederick Polley will be awarded the winners of the contest.

Hospital News.—Improvements costing $10,000 will be made at the Marine Hospital, Evansville.——The William S. Major home, Shelbyville, will be remodeled for a city hospital in the near future. The home, which is valued at $75,000, was bequeathed to the city for this purpose by William S. Major. It is estimated that the cost of maintenance will be about $8,000 yearly. Provisions for the expense will be made in the tax levy for the city. It is planned to open the institution to the public as a hospital by Jan. 1, 1923.——The campaign for $100,000 instituted for the Deaconess Hospital, Evansville, was oversubscribed $12,250.——The new county hospital at Hartford City is nearing completion.——An addition has been erected to the Witham Hospital at Lebanon at a cost of $20,000.——A county orphans' home will be built at Lagrange. The institution will cost $60,000 and will be a two-story and basement structure.——Plans have been prepared for a new hospital in Julietta. It will be a two-story and basement structure of brick, steel and reinforced concrete construction to cost approximately $135,000. It will be under county control.——Plans are complete for a new sanatorium to be erected at Martinsville. Six buildings will comprise the new institution. They will be a three-story and basement structure costing $1,250,000.

IOWA

Association for the Blind.—At the annual meeting of the Iowa Association for the Blind, at Vinton, a corporation was established to be known as the Iowa Foundation for the Blind. The purpose of the foundation is chiefly to raise money to be lent to worthy young blind persons who wish to enter business for which they have been fitted but lack capital.

Society News.—At the recent meeting of the Iowa Clinical Society Dr. Francis A. Ely, Des Moines, was elected president; Dr. Charles A. Waterbury, Waterloo, vice president, and Dr. Russell C. Doolittle, Des Moines, secretary-treasurer.——The Polk County Medical Society has decided to hold a three-day clinic, October 17-19, in Des Moines. The five excellently equipped hospitals will furnish facilities for demonstrating the cases.——Dr. Edward L. Rohlf, Waterloo, and Dr. Leonard A. West, Waverly, were elected president and secretary, respectively, of the Austin-Flint-Cedar Valley Medical Association, recently.——Dr. John F. Herrick, Ottumwa, has been elected president of the newly organized Military Surgeons Club of Iowa.

Banquets for Physicians.—A dinner and special meeting of the Jones County Medical Society was held in Monticello, July 17, in honor of Dr. Harrison W. Sigworth, Sr., Anamosa. Dr. Sigworth is now 85 years old and has practiced medicine in Anamosa for half a century.——A complimentary dinner was given to Dr. Lee Wallace Dean by his former interns recently. At this, the first gathering of the men associated with Dr. Dean, they organized, electing Dr. Gordan H.

Harkness, Davenport, president, and Dr. Clark H. Lauder, Grinnell, secretary.——A banquet was given July 19, in Des Moines, in honor of the seventieth birthday of Dr. James Taggart Priestley of that city and to celebrate his fiftieth year of practice. Dr. Priestley is retiring from practice.

LOUISIANA

Radio for Lepers.—The Women's Auxiliary, Rollins Post of the American Legion, installed a radio outfit at the Lepers' Camp at Carville, July 4.

Personal.—Dr. Wilbur C. Smith will be the new athletic director at Tulane University, New Orleans, as well as professor of anatomy in the college of medicine.——Dr. Marion S. L. Lombard, who for three years has been directing head of the New Orleans division of the U. S. Public Health Service, was recently transferred to Mobile, Ala., under the department policy to change its directing heads every three years. Dr. Charles L. Williams, who is epidemiologic aide to the state board of health of Louisiana, will succeed Dr. Lombard.

MAINE

Personal.—Dr. Leverett Dale Bristol, Winthrop, for four years health commissioner of Augusta and formerly connected with the medical faculties of Syracuse, Minnesota, Bowdoin and Harvard universities, has been appointed professor of preventive medicine and public health in the University of Minnesota Medical School and the University of Minnesota Graduate School of Medicine. He will assume his new duties September 1.

Hospital News.—Plans have been completed for the $45,000 addition to Madigan Memorial Hospital, Houlton.——Construction work has been commenced on the new Sisters Hospital to be erected at Waterville. The building will be four stories high and H. M. Rourke, Lowell, Mass., is the architect of the structure.——It is reported that the Female Orphan Asylum property at Portland will be converted into a hospital. Other buildings will be added to the present orphanage and a modern institution developed.

MARYLAND

Investigating Board of Physicians Requested for Penal Institutions.—The state board of prison control has invited Dr. Llewellys F. Barker, Dr. J. Randolph Winslow, Dr. Francis Lee Dunham, Dr. Anton G. Rytina, and Dr. Samuel Wolman, to inspect medical and hospital conditions at the Maryland Penitentiary and the Maryland House of Correction and advise the board what should be done for their improvement. No complaint is made of the physicians in charge, but it is believed that valuable suggestions can be made from outside, and improvements which may be proposed will have the weight of authority of men of high standing in their profession.

Health Department Plans Station on Eastern Shore.—Establishment of a bacteriologic laboratory on the eastern shore is planned by the state department of health, to overcome delays in examination of cultures from communicable disease cases. The new station, which will serve as a branch of the Baltimore laboratory, is expected to be in operation by September 1. Under present conditions, specimens obtained in tuberculosis, diphtheria and typhoid cases are not returned to physicians on the lower eastern shore in less than three days. A site will be sought at some point affording quick transportation to all eastern shore counties. Hagerstown and Cumberland, in the western section of the state, have such laboratories.

MASSACHUSETTS

Hospital News.—The new east wing of the Free Hospital for Women, Brookline, was formally opened, June 16.——New buildings will be erected at the Lawrence Memorial Hospital, Medford, in the near future, at a cost of $200,000.——Work will be begun this summer on a new institution for the feebleminded, to be erected by the state at Belchertown.——Plans have been drawn for a new hospital building for the State Infirmary at Tewksbury. It will be a brick structure costing approximately $100,000.——The New England Baptist Hospital at Boston will erect a new addition at an estimated cost of $400,000.——Appropriate exercises for the laying of the cornerstone of the new hospital building for Holden District Hospital, Inc., at Holden, were held, June 4.

Changes in the Faculty at Harvard.—Dr. Edward P. Richardson has been appointed assistant professor of surgery at the Medical School of Harvard University, Boston. Dr. Reginald Fitz, for the last two years professor of medicine, University of Minnesota, has been named associate professor of medicine. Leonard T. Troland, for six years instructor in psychology, has been promoted to an assistant professorship. Dr. Jacques Bronfenbrenner has been appointed assistant professor of bacteriology; Dr. Alice Hamilton, assistant professor of industrial medicine; Dr. George Shattuck, assistant professor of tropical medicine; Dr. David Cheever, assistant professor of surgery; Dr. Lloyd D. Felton, assistant professor of preventive medicine and hygiene, and Dr. James L. Gamble, assistant professor of pediatrics. Dr. James S. Stone and Dr. John Homans have been appointed instructors in surgery, and Drs. William H. Smith and Frank H. Hunt, instructors in medicine.

MISSOURI

Home for Dependent Children.—Under enactment of the state board of charities and corrections, the state home for dependent and neglected children has been located at Carrollton. The home is intended to care for all deserving homeless, neglected and dependent children of the state. No defectives are to be admitted to the institution, which will be under the direction of Mrs. Reed, matron, and Dr. C. S. Austin, Carrollton, physician.

Legislative News.—The referendum on the medical college bill (Senate Bill No. 433) passed by the last legislature, has been denied in a decision by the supreme court, which upheld the finding of the circuit court declaring the names on the petitions in the Fourth Congressional District insufficient. The supreme court discovered that there were only four names less than the required number. The petitions from the fourth district being thrown out, the entire referendum failed, because there were not enough other districts represented to meet the necessary two-thirds requirement. The law which now becomes effective permits any one whom the board refuses to license to appeal to the circuit court, and the circuit court is empowered to rule on the question of what shall constitute a medical school of good standing.——A proposal has been introduced in the Constitutional Convention, now in session, amending the bill of rights by adding "the right to administer to the sick for compensation." Another proposal makes it optional for persons to comply with any health regulations to prevent disease. A third proposal authorizes the General Assembly to provide means for safeguarding the public health and welfare.

NEW JERSEY

Additions to Hospitals.—A three-story addition will be made to the Essex County Hospital for Contagious Disease at Soho, Belleville, which has already a capacity of 379 beds.——A new nurses' home will be erected at the County Tuberculosis Hospital at Allenwood, it is announced.——The board of chosen freeholders of Essex County has authorized the preparations of plans and specifications for additional hospital buildings at Overbrook, Cedar Grove.

Physicians to Cooperate on Compensation Charges.—The Medical Society of New Jersey will cooperate with the state department of labor in deciding a just rate of compensation for services given to put into effect the amendment to the Workmen's Compensation act (THE JOURNAL, April 15, page 1134). This measure provides for medical and surgical care in excess of the former $50 limit, and hospital care in excess of the same figure in cases in which application for such additional service has been made to the compensation bureau. After a conference of the welfare committee of the medical society and the acting director of the department of labor a digest of the law and sample form of report has been issued to every member of the society. The digest stipulates that a triplicate report be made by the attending physician, one to be sent to the employer of the patient at the time of the accident and two to be given to the department of labor. One of these will be sent to the insurance carrier. To prevent overcharges for medical services, the state medical society will name a physician in each compensation district to pass on the reasonableness of medical bills in dispute. These physicians will confer with two other physicians, one to represent the employers and the other appointed by the department of labor. Drs. John Haggerty, Newark; Dr. John McCoy, Paterson; Dr. Henry B. Costill, Trenton; Dr. A. Haines Lippincott, Camden, and Dr. Samuel Cosgrove, Jersey City, are physicians suggested by the state society for this work.

NEW YORK

Personal.—Dr. George Schwartz, New York, has been appointed surgeon-in-chief of the child welfare board. The appointment was approved by Dr. Royal S. Copeland of the board of health. Dr. Schwartz will look after the interests of 9,000 widows and 30,000 orphans who come under the jurisdiction of the child welfare board.——Dr. Nathan O. Ratnoff, chairman of the American Jewish Physicians' Committee, accompanied by Drs. David J. Kaliski and Samuel J. Kopetzky, New York, sailed July 22, on the S. S. *Homeric*, for Palestine for the purpose of beginning construction of the Medical School of the Hebrew University in Jerusalem.——Dr. Harold R. Mixsell and Dr. George Gray Ward, Jr., New York, sailed for Europe, July 22.——Dunlap P. Penhallow, surgeon, U. S. P. H. S., New York, has been appointed surgeon-in-charge of the Public Health Service Hospital at St. Louis.——Dr. Menas S. Gregory, Bellevue Hospital, New York, sailed for Europe recently, to study the management of mental patients in hospitals of France, Italy and Switzerland.——Dr. Maxwell S. Blieden, Johannesburg, South Africa, is in New York for research study, visiting hospitals for this purpose.

New York City

Maternity Center Association Plans Nation-Wide Campaign.—The Maternity Center Association is publishing a series of twelve "Talks to Mothers," through which it is hoped to distribute authoritative information on prenatal care among 100,000 mothers in all parts of the United States. In the distribution of the pamphlets, the association plans to enlist state and city health departments and nursing and public health associations closely in touch with local conditions.

Alcoholic Deaths Increase.—According to the records of Chief Medical Examiner Dr. Charles Norris, deaths from acute alcoholism in New York this year have increased 27 per cent. over 1921 and 89 per cent. over 1920. The records show that eighty persons died of acute alcoholism in the first six months of 1922. These records include only those victims who died without medical attention. Dr. Norris thinks many others attended by private physicians have died from the same cause. Poisoned liquor is largely responsible for the increase.

NORTH CAROLINA

Feebleminded and the Law.—The state psychiatrist and professor of abnormal psychology at the University of North Carolina, Dr. Harry Crane, recently announced that there are 50,000 feebleminded persons in that state alone, and that 90 per cent. of the inmates of the county homes are mentally abnormal. Many of these people are producing children, often worse equipped mentally than themselves, who in turn fill the state's institutions. The state laws limit the period in which persons may be cared for, throwing the responsibility for the control and care of these people back on the community, which has made no provision to meet a contingency.

OHIO

New Hospital Superintendent.—Dr. Solomon A. Hatfield has been appointed superintendent of the University Hospital, Columbus, formerly a homeopathic institution. This is the first step toward coordinating work of the University Hospital with the Ohio State University College of Medicine. Dr. Claude A. Burrett, dean of the Homeopathic College, formerly was in charge of the hospital.

University Honors Two Donors.—Two chairs in the University of Cincinnati College of Medicine, honoring John D. Rockefeller and Andrew Carnegie, donors of munificent sums to the medical school, were founded at a meeting of the board of directors, July 19. The professorship in obstetrics will be known as the John D. Rockefeller Chair of Obstetrics and the professorship in biochemistry as the Andrew Carnegie Chair of Biochemistry. Dr. William Gillespie holds the chair of obstetrics, and Albert Prescott Mathews, Ph.D., is professor of biochemistry.

Hospital News.—A new hospital will be erected at Cincinnati which will be known as the Alms Hospital. Harry Hake of Cincinnati is the architect.——A new nurses' home will be erected at the Grant Hospital, Columbus, at a cost of $110,000. It will be a four-story building.——A site has been purchased for a new home for the Toledo Sanatorium for the feebleminded. The new institution, including several cottages, will be erected at a cost of $1,000,000. The owner and physician in charge is Dr. James A. Belyea.——The Protestant Hospital, Columbus, will be enlarged to accommodate 150 beds. Money will be raised at once for the project. It is estimated roughly that it will cost $300,000. A staff for the hospital will be elected in the near future.

PENNSYLVANIA

Hospital News.—The cornerstone of the Homestead Hospital, Pittsburgh, was laid July 28.——A comprehensive plan for improvements and additions to various city hospitals to be completed within the next year at a cost of $1,300,000 was instituted recently in Philadelphia, when Director Furbush opened bids in his office for dormitory buildings, to be used by attendants at the Philadelphia General Hospital and the administration building at the Philadelphia Hospital for the Insane at Byberry.——The contract has been awarded for the construction of the administration building at the Philadelphia Hospital for the Insane at Byberry. The cost of the building is not to exceed $112,351.——New buildings, including a nurses' home, will be erected at the Tuberculosis Hospital, Pittsburgh.——An addition will be built to St. John's General Hospital, Pittsburgh. Plans call for a three-story brick building, costing $65,000.

Philadelphia

University to Erect Graduate School.—Announcement was made, July 26, of the contemplated erection by the University of Pennsylvania of a graduate school of medicine. This was made public following the sale of the Medico-Chirurgical Hospital and College properties by the university. Some years ago, the Medico-Chirurgical Hospital buildings and the adjoining properties were transferred by the Medico-Chirurgical College and Hospital to the University of Pennsylvania, for the purpose of founding a graduate school of medicine. At that time, the erection of a new teaching hospital for this graduate school on the campus of the university was contemplated, but the prohibitive building prices during the war prevented the carrying out of the original plans.

RHODE ISLAND

Poliomyelitis in the State.—The state board of health warned physicians, July 21, that all cases of infantile paralysis must be reported both to the state board and to the health officer of the city or town wherein the case develops, forthwith on diagnosis. Infantile paralysis is spreading all over the state and many cases have not been reported, Dr. Byron U. Richards, secretary of the state board of health, states. The Pawtucket Valley and the city of Providence are the present centers of the near epidemic of this disease. Fifteen cases and four deaths are reported from Providence.

SOUTH DAKOTA

To Erect Hospital at Minot.—The Trinity Hospital Association has recently been formed for the purpose of founding a 100 bed hospital at Minot. The plans have been completed and call for a $200,000 institution. A. O. Fonkalsrud, Ph.D., formerly of Fargo, is the organizer of the project and will be superintendent of the new hospital.

TENNESSEE

Hospital News.—The contract has been let for the construction of an addition to the City View Sanatorium, Nashville, at an estimated cost of $115,000.——As a monument to the city and to the fraternity a general hospital will be erected at Chattanooga by the Masons of the district.——The Methodists have recently purchased a site in Memphis on which they will erect a hospital, the one completed in the spring having been sold to the government.——A county sanatorium will be erected at Knoxville. There will be a central administration building for offices and nurses' quarters. Several cottages for patients will be erected in the grounds.——Announcement was made, July 18, by the local antituberculosis association that more than $100,000 had been raised in a recent drive in Knoxville to build a tuberculosis hospital. Work will be commenced about September 1.

VIRGINIA

Open New Buildings.—The two new units of the modern fireproof Marshall Lodge Memorial Hospital, Lynchburg, have been completed and were opened to the public, June 24. Guests of honor for the day were the donors whose gifts made the building possible. The hospital represents an outlay of $200,000.

WASHINGTON

Graduate Medical Lectureship.—The sixth session of a series of lectures given at the University of Washington, Seattle, started July 17. Five lectures each were given by Dr. Hobart Amory Hare, professor of therapeutics, Jefferson Medical College, Philadelphia; Dr. John B. Deaver, professor of surgery, University of Pennsylvania, and Dr. Williams McKim Marriott, professor of pediatrics, Washington University, St. Louis. Single lectures were given by Dr. William Englebach, professor of medicine, St. Louis University School of Medicine; Dr. Joseph Colt Bloodgood, professor of surgery, Johns Hopkins University, Baltimore, and Dr. Walter Bradford Cannon, professor of physiology, Harvard University, Boston. The lectureship was the product of cooperation between the University of Washington, the Washington State Medical Association and the King County Medical Society, and was established in 1916.

WISCONSIN

Hospital News.—The new addition for St. Saviour's Hospital, Portage, has been completed. This includes eighteen rooms for private patients, roentgen-ray rooms and a lecture hall for the sisters.——Plans have been completed for a new building for Holy Family Hospital at Manitowoc.——A hospital will be erected at the state school for the deaf at Delavan in the near future at a cost of $75,000.——Construction work of the $1,350,000 Wisconsin General Hospital to be erected at Portage will be forwarded at once.

CANADA

Radium Institute.—It is announced by Premier Taschereau, that an institute for radium treatment will be established in connection with the University of Montreal, Quebec. Arrangements are now being completed to obtain 1 gm. of radium at a cost of $100,000, the amount necessary to commence operations. This institute will be the property of the province.

Public Health News.—In his report to the local board of health for the first six months of this year, Dr. C. J. O. Hastings, medical officer of health, Toronto, Ont., advises that the infant mortality rate is the lowest in the city's history. The rate is given at eighty per thousand births, and it is estimated that if there had been a complete registration of births the actual rate would have been sixty-eight per thousand births. The general mortality rate for June was 9.9 per thousand as against 8.8 per thousand for the same month last year. The half yearly rate was 11.5 as against 12.0 for the first six months of 1921. It is pointed out that over half the deaths registered occurred before the age of 1 month, and it is presumed that these occurred from prenatal causes. Cancer claimed the greatest number of victims, forty-eight deaths being registered from this cause in June. The death rate from communicable diseases was light. During June, 1922, not one birth, marriage or death was recorded from the town of Port Dalhousie, Ont.

Personal.—Dr. George D. Porter, director of health services at the University of Toronto, represented the Canadian Association for the Prevention of Tuberculosis at the International Union Against Tuberculosis at Brussels, Belgium, in July.——Prof. Herbert S. Birkett, dean of the faculty of medicine, McGill University, Montreal, delivered the Semon lecture at the University of London, July 12.——Dr. Willard F. Read, Digby, N. S., was recently elected president of the Valley Medical Society.——Dr. John J. Mackenzie, head of the department of pathology in the University of Toronto, is seriously ill in a sanatorium near Gravenhurst, Ontario.——Dr. T. J. McPhee has been appointed health officer of Namaimo, B. C.——Dr. Charles D. McCulloch has been appointed associate coroner for Prince Edward County, Ont. ——Drs. John G. Fitzgerald and John W. S. McCullough, Toronto, recently sailed for Europe on the *Montcalm*, which ran aground near Quebec City the same day and was not released until two days later, when the passengers were transferred to other steamers.

University News.—At a special convocation of the University of Toronto, June 8, the following honorary degrees were conferred on physicians: doctor of medicine, Dr. Huerner Mullin, past president of the Ontario Medical Association; doctor of science, Dr. A. D. Macallum; doctor of laws, Sir Auckland C. Geddes, British ambassador to the United States and former professor of anatomy at McGill University, Montreal. His appointment at Washington, D. C., compelled Sir Auckland C. Geddes to resign from the position of president of McGill University to which he had been appointed.—— The degree of LL.D. was conferred on Dr. Clarence L. Starr by McMaster University, recently.——Dr. Perry G. Goldsmith has been appointed professor of otolaryngology in the University of Toronto, to succeed Dr. David J. Gibbs Wishart, who resigned recently following thirty-seven years in that capacity.——Dr. William B. Hendry has been appointed professor of obstetrics and gynecology in the University of Toronto, to succeed Dr. Benjamin Watson.——Dr. William H. F. Addison has been appointed associate professor of anatomy in the University of Toronto Faculty of Medicine. ——Dr. Robert D. Defries has been appointed associate professor of hygiene in the University of Toronto and will be acting head of that department until the return of Prof. John Fitzgerald from California.

PHILIPPINE ISLANDS

Culion Medical Society.—It is announced by the *Journal of the Philippine Islands Medical Association* that plans are being made to organize a medical society at Culion, Culion, in view of the many physicians stationed there. This would be the first unit of the long planned establishment of provincial branch societies of the Philippine Islands Medical Association.

Invasion by Chiropractors.—It is reported from Manila that numbers of chiropractors have recently arrived in the islands from the United States. It is announced that they have bought full page advertisements in the local papers claiming to cure almost every ailment, and that they are attempting to have a bill submitted to the legislature regulating the practice of chiropractic, and to establish a chiropractic examining board for the Philippines.

Call for Aids at Culion.—The following physicians, mostly from the University of the Philippines and the Philippine General Hospital, have accepted positions at the leper colony, at Culion, following a call for help: Drs. Jose M. Alonzo, Jose Avellana, Froilan C. Eubanas, Guillermo Fernandez, Santiago Icasiano, Dalmacio Jugueta, Gavina Limcaco, Catalino Nicolas, Eloy Pineda, Jose Rodriguez, Jose Samson, Filizberto Solis, Felix Valasco, Bonifacio Vera and W. Wade. Dr. Eliza Roxas is the only woman physician at Culion. Plans are being made to construct additional buildings at the colony, especially for the segregation of the children of the inmates who are apparently leprosy-free.

GENERAL

Thousands of Health Workers Wanted.—President Vincent of the Rockefeller Foundation states that, during 1922-1923, the United States will require the services of probably 20,000 health workers. At present the number under state, municipal, federal and county control is 10,000. Those in the employ of nongovernmental institutions or agencies may number nearly as many more.

American Relief Administration.—Thirty-three physicians and surgeons, each in charge of one of the Moscow (Russia) Hospitals, have united in signing a letter of thanks to Dr. William D. Nickelsen, medical supervisor of the Moscow district for the American Relief Administration. The letter states that, when on their last resources, the Moscow hospitals received supplies from the relief administration which have helped to check disease, and thanks the administration for its humanitarian activities and willingness to continue the work in the future.

Physicians and Druggists Protest to Revenue Bureau.—As the result of a protest to the Bureau of Internal Revenue by representatives of the drug and medical professions against the needless and burdensome regulations of the Harrison Narcotic Law and the Volstead Act, executive officials of the prohibition department have been instructed by the internal revenue commissioner to "get together" with representatives of the drug trade and to do everything possible toward effecting more agreeable enforcement measures. This was announced by the counsel for the National Association of Retail Druggists at Washington, D. C., in July. Vigorous protests were lodged against the provision requiring the confirmation by the issuing director of all druggists' permits to purchase intoxicating liquor, including alcohol, it being pointed out that this regulation, if enforced, will invariably cause needless delay to the druggists in their efforts to serve quickly the people with whom they trade. Dr. George A. Knowles, Philadelphia, chairman of the legislative committee of the Medical Society of the State of Pennsylvania, and Dr. John N. Henry, Philadelphia, president of the Philadelphia

County Medical Society, represented the medical profession at the hearing.

Bequests and Donations.—The following bequests and donations have recently been announced:

University of Chicago and Northwestern University, Chicago, a total of $200,000; American University of Washington, $25,000, by the will of Mrs. Ann M. Swift of Chicago.

St. Joseph's Hospital, Syracuse, N. Y., $100,000, for a ward in memory of his wife, by George Dohney. In addition to this bequest, the hospital receives one ninth, or about $150,000, of the residuary estate. Among other institutions included in the will are St. Mary's Maternity Home, the Maternity Hospital and Infants' Home, and the Syracuse Free Dispensary.

Sheltering Arms, the New York Society for Relief of Ruptured and Crippled, and the Nursery and Child's Hospital, $50,000 each; Tarrytown Hospital, $25,000; St. Luke's Hospital, $20,000; New York Association for the Blind, the Society for the Relief of the Ruptured and Crippled and the Church Mission, each $65,000, by the will of Mrs. Mary Kingsland.

For the erection of a memorial hospital at Albion, Mich., to be known as the James W. Sheldon Memorial Hospital, $50,000, by the will of Mrs. Leffingwell of Albion.

Newton Hospital, Newton, Mass., $20,000, by the will of Mrs. Juliet Dike of Newton.

Grant Hospital of Chicago, $10,000 and the German Old People's Home, $5,000, by the will of Mr. Herman Paepcke of Chicago.

University of Virginia Medical School, Charlottesville, a twenty-year endowment life insurance policy for $5,000, by the 1922 graduates from all departments.

Hollywood (Calif.) Hospital Company, $5,000, anonymously.

Hygeio Camp for Tuberculosis, New Orleans, $1,400, realized from a tag day.

St. Joseph's Hospital, Syracuse, N. Y., Mount Sinai Hospital and Montefiore Hospital, New York, each $1,000, by the will of Emanuel Jacobson.

Yale University, New Haven, $1,000, for study of the chemistry of the tubercle bacillus, by the National Tuberculosis Association.

Charleston (S. C.) County Tuberculosis Association Camp, twenty-four beds and equipment from various residents and organizations of Charleston.

Intelligence Service of the League of Nations—The International Health Board of the Rockefeller Foundation has entered into a cooperative arrangement with the Health Organization of the League of Nations whereby the board will provide a sum not to exceed $32,840 a year, for a period of five years, for the purpose of maintaining an international epidemiologic intelligence service. The board will also provide a sum not to exceed $60,080 a year for three years to put into effect a scheme for the international exchange of public health personnel, to be conducted under the auspices of the health organization of the league. Since the establishment, in 1921, of the intelligence service of the health organization of the League of Nations, it has conducted an international epidemiologic information service, keeping all governments informed as to the status of epidemics of typhus, intermittent fever, and cholera, which have been sweeping westward from the famine regions of Russia. It has also undertaken to promote the international standardization of vaccines and serums. It advises the league in matters affecting health and cooperates with the International Labor Organization in promoting industrial hygiene and sanitary conventions for the control of epidemics. It is expected that, by the end of the five-year period, for which funds have been provided by the International Health Board, the epidemiologic intelligence service will have become so efficient and valuable that the various national governments will regard it as indispensable and provide funds for its further maintenance. Interchange of health officials will be arranged, not only for observation but for definite periods of service, which will result in actual exchange of experience. This system of exchanges will be put into effect first in Europe and may be extended to other countries throughout the world.

LATIN AMERICA

Nicaraguan Physician Studying Sanitary Methods.—Dr. Fausto Robleto of Nicaragua, after spending one year at the Johns Hopkins University School of Hygiene and Public Health, has spent a few weeks in several counties in Alabama, studying field malaria work. Dr. Robleto is about to sail for his country to put to practical use the knowledge gained in this country.

New Medical Society in Peru.—Under the name of "Círculo Medico del Perú," there has been organized in Lima a medical society with a membership of more than 100 local physicians. The following officers were appointed: Honorary president, Dr. Ricardo Flores; president, Dr. Pablo S. Mimbela; first vice president, Dr. Guillermo Gastañeta; second vice president, Dr. Miguel Aljovín; secretaries, Drs. Francisco Graña, Ricardo Palma and Juan Voto Bernales; treasurer, Dr. Oswaldo Hercelles; librarian, Dr. Ramón Ribeyro; editor, Dr. Hermilio Valdizán, and members, Drs. J. Arce, R. Neuhaus, R. Eyzaguirre, F. Merkel, C. Monge and C. Carvallo.

Personal.—Prof. Rocha Lima, chief of the Instituto Oswaldo Cruz of Rio de Janeiro, has returned from a trip abroad.——The Academia Nacional de Medicina at Rio de Janeiro has conferred the Sampaio prize this year on the pharmacist, P. Seabra, for his work on an electric process for producing nitric acid.——The *Brazil-Medico* relates further that Dr. Barbosa Vianna, was the guest of honor at a banquet, June 23, Dr. Aloysio de Castro presiding, just before the latter left for Europe to be the representative of South America in the committee organized by the League of Nations to promote international intellectual relations.——Our exchanges mention the arrival at Rio of Prof. F. Munck of Berlin who addressed the local medical society, with slides, on the diagnosis of tuberculosis.

FOREIGN

Society News.—The third annual conference of the Gynecologists and Obstetricians of Great Britain and Ireland was held at Liverpool, June 30-July 1.——The third annual meeting of the Society for the Prevention of Venereal Disease of England was held in London, June 29, under the presidency of Lord Willoughby de Broke.

New Medical Magazine.—A new monthly magazine, edited by the Medical Society of Esthonia in Dorpat, containing articles of interest on medicine, surgery and public health, has recently been issued. The major part is written in Esthonian, with summaries in French and German. Some of the articles are written in French and German.

Closing of a Sanatorium on Account of Insubordination.—The *Policlinico* relates that the sanatorium at Eremo di Lanzo has had to be closed as some of the inmates insisted on managing the place to suit themselves. The ringleaders had to be taken away by the police. The other inmates were distributed in other sanatoriums, and the establishment was closed.

Tuberculin Controlled in Jugo-Slavia.—The Postoffice Department has announced that American postal officials have been notified by the Jugo-Slavia government that shipments of tuberculin through the regular mails to that country are prohibited except when consigned to the minister of public hygiene, the central pharmaceutical and sanitary depots and bacteriologic institutions.

Scientific Congress.—The Flemish scientific congresses will be held at Bruges, Belgium, July 30-August 7. An exhibition of medical and surgical instruments and of scientific books will be held at the same time. Many eminent scientists and physicians will deliver lectures on scientific and medical subjects, more than eighty communications and lectures being announced.

Graduate Course in Crime and Punishment.—The first graduate course in Crime and Punishment, held the last two weeks in May at the University of Birmingham, England, has been pronounced a success. The course consisted of six lectures in each of the three subjects: mental defects, insanity, and crime and punishment. Dr. Maurice Nicoll gave two special lectures. It is hoped to repeat the course next spring.

Prize for Essay on Infant Mortality.—The National Baby Week Council has approved the offer of the London *Daily News* of 100 guineas (about $500) for the best essay of 2,000 words dealing with the problem of the excessive mortality of boy babies. Awards will also be made to the statutory maternity and infant welfare committees of the districts which effect the greatest reduction in the boy baby death rate within the next twelve months.

Degree in Medical Radiology.—The *Journal de Radiologie* of Paris states that the medical faculty of the University of Toulouse, France, has decided to organize a course in electrology and medical radiology and will present a diploma to the graduates. Paris was the first French university to organize a course in radiology but this is the first in France to include electrology, although electroradiology is a single, indivisible study, at least during the first part of the course.

The Centennial of the Brussels Medical Society.—The hundred years of work of the Société des Sciences Médicales et Naturelles of Brussels was reviewed at the centennial celebration on June 22. The president remarked that we must not smile at the errors of the past, as who knows what the future may do to our own beliefs, adding that the responsibility of the physician has been immeasurably enhanced by the immense progress of science. The acting president of the society is Professor Bordet, who has contributed much to our knowledge of hormones and fixation of complement tests.

Sanitary Reorganization in Spain.—The government has introduced a bill for the prevention of avoidable diseases. The bill provides for the compulsory notification of communicable diseases; enforcement of preventive measures, especially as regards tuberculosis, leprosy, venereal diseases, malaria and infant mortality; investigation of any undue mortality; safe water supplies; creation of food and hygiene laboratories; industrial sanitation; school hygiene, and the appointment of sanitary inspectors. The present public health law in Spain goes back to 1855 and it is considered out of date.

British Medical Association.—The ninetieth annual meeting of the British Medical Association was held in Glasgow, Scotland, July 25-28, under the presidency of Dr. David Drummond, Newcastle-on-Tyne. Sir William Macewen, Glasgow, was elected president for the year 1922-1923, and Mr. Charles P. Childe, F.R.C.S., Southsea, is president-elect for the annual meeting to be held in Portsmouth in 1923. A pathologic museum was organized for the meeting in the anatomic department of the University of Glasgow. A public health exhibition was also held by the Corporation of Glasgow during the session.

The Chalmers Library.—The library of the late Dr. Albert J. Chalmers, formerly director of the Wellcome Tropical Research Laboratories (Sudan), has been presented by his wife to the Royal Society of Medicine. The Chalmers Library was formally opened, June 23. There are about 1,800 volumes in all, which includes volumes printed before the end of the fifteenth century and others in the sixteenth and seventeenth centuries. There is the first printed edition of Celsus, *De Re Medicina* (1478), a complete collection of the writings of Culpeper, a copy of *De Contagione*, by Fracastorius (1546), Turner's *Greate Herball*, printed in Cologne in 1568, and several fine herbals, including a copy of that issued by Fuchs in 1543 and Brunfels in 1546.

Personal.—A prize of 2,500 pesetas has been presented by the municipal authorities of Madrid to Dr. A. Navarro Fernández for his report of his official visit to Sweden, Norway and Denmark to study ways and means to repress the spread of venereal diseases. The authorities ordered 2,500 copies of the report to be published for distribution.——The Madrid laryngologist, Dr. Hinojar, was tendered a banquet on his return to his native town, Soria, recently, and the medical faculty of his alma mater, Zaragoza, sent a deputation with greetings.——The last lecture of Prof. Paul Bar of the chair of obstetrics at the Paris medical faculty was rendered an ovation by the crowds who came to bid him farewell on his retirement, having reached the age limit. He had declined any formal ceremony, and devoted his lecture to summarizing the results of his own and others' research on the metabolism of fat and sugar in the pregnant.——A memorial tablet to the late Prof. Raphael Lépine of international fame was recently unveiled at the medical clinic at Lyons.——A gold medal was presented by students and other friends to Professor Pentimalli of the chair of general pathology at the University of Naples.——The fortieth anniversary of Maragliano's work in the medical faculty at Genoa was celebrated with much ceremony and the foundation of a medical library, June 25, concluding with a reception on board the *Bon Voyage* in the bay, after a memorial had been unveiled to two assistants in the clinic, killed during the war.

Deaths in Other Countries

Dr. **T. Zabala,** a prominent psychiatrist of Buenos Aires, founder and director of the Instituto Charcot.——Dr. **Karl Hasse,** formerly professor emeritus of anatomy at the University of Breslau, aged 81.——Dr. **Heinrich Albrecht,** professor of pathologic anatomy at the University of Vienna.——Dr. **Julio Matos,** a psychiatrist of Lisbon.——Dr. **G. Correa Barbosa Lima** of Rio, physician to the Brazilian Lloyd Line, aged 68.——Dr. **Guilherme Taylor March,** aged 83, whose services in the city of Nictheroy were so appreciated by the people that he was known as the "father of the poor," and a tax-free house was presented to him by the populace.——Dr. **N. A. Bergenholtz** of Stockholm.

CORRECTION

Schick Test Campaign.—Concerning the item with this heading, which appeared in the New York news, July 15, we are informed that the board of health has started a city-wide campaign, that the number of physicians assigned are twelve, and the number of nurses and nurses' assistants, twenty-five. The personnel has been divided into two groups, the work being carried out under the immediate supervision of Dr. M. C. Schroder in Brooklyn, Queens and Richmond, and of Dr. A. Zingher in Manhattan and the Bronx.

Government Services

Hospitalization in Veterans' Bureau

Director Forbes of the U. S. Veterans' Bureau has submitted for the President's approval sites for two new hospitals, one at San Diego or Los Angeles, Calif., and the other at Minneapolis or St. Cloud, Minn., or Fargo, N. D. Returning from a recent western trip of inspection, he stated that he had found the administration of the Veterans' Bureau activities entirely satisfactory in Illinois, Colorado, Washington, Oregon, California and Minnesota. He declared that the construction of all twelve of the new hospitals for which Congress had recently appropriated $17,500,000 would be under way shortly. Assistant Secretary Clifford of the Treasury also announced that during the fiscal year ending, June 30, 1922, twelve new hospitals had been erected, with a capacity of 4,051 beds, located in various parts of the country, including institutions for the treatment of veterans suffering with tuberculosis, mental diseases, surgical cases and general cases. The hospitals erected under the jurisdiction of the Treasury Department during this period were as follows: Lake City, Fla., 230 beds; Whipple Barracks, Ariz., 422 beds; Little Rock, Ark., 257 beds; Fort Walla, Wash., 165 beds; Fort Bayard, N. M., 250 beds; Fort McKenzie, Wyo., 242 beds; Bronx, N. Y., 650 beds; Edward Hines, Chicago, 1,000 beds; Mount Alto, Wash., 100 beds; Dawson Springs Sanatorium, Dawson Springs, Ky., 500 beds, and Excelsior Springs, Mo., 75 beds.

Medical Reserve Corps Organizes Society

During the recent encampment of the medical, dental, veterinary and administrative officers of the M. O. R. C., Camp McClellan, Ala., July 12-26, a temporary organization of the medical section of the Fourth Corps Area was effected. Lieut-Col. Haride R. Hays, Jackson, Miss., was elected president of the organization and Major L. H. Webb, New Orleans, was elected secretary. It is hoped to organize a national reserve officers association with the medical section, to function in this organization, during the national convention of the American Legion in New Orleans in October.

Physiotherapy Course for Training of Aids

A course in physiotherapy, covering a period of one year, will be offered at the Walter Reed General Hospital, Washington, D. C., beginning October 2. The subjects will include all branches of physiotherapy, and in addition lectures on general hospital subjects. Credit will be given for previous training in physical education, nursing, physiology and anatomy, making it possible to complete the course in six months or less. Accepted candidates will be furnished quarters, rations, and laundering of uniforms, in addition to $15 a month. Graduates will be eligible for positions in the physiotherapy department in army hospitals, and are expected to serve one year.

Hospitals for Disabled Soldiers

Locations of two new hospitals for the care and treatment of disabled ex-service men were announced this week by the U. S. Veterans' Bureau, each to cost $1,000,000. The first, consisting of from 250 to 300 beds for mental cases, will be erected at St. Cloud, Minn.; while the other, with a capacity of 500 beds, will be constructed at Camp Custer, Mich. The latter will be built in lieu of the one proposed for the Great Lakes Training Station, the President having requested Director Forbes to consider the Michigan location, since Illinois already has several large hospitals.

Legislation for Disabled Naval Officers and Men

A measure introduced in the Senate by Senator Shortridge of California provides that all former emergency officers of the World War who served in the Naval Reserve forces and in the Marine Corps Reserve and who have been discharged from the service on account of physical disabilities shall have the same pay, privileges and allowances as regular retired officers of the Navy and the Marine Corps. A similar bill for emergency officers of the Army has been before Congress for some time.

Foreign Letters

PARIS

(From Our Regular Correspondent)

July 13, 1922.

A Legacy of a Million Francs to the Academy of Medicine

Prince Albert of Monaco, who died recently, bequeathed to the Academy of Medicine, of which he was an honorary member, the sum of one million francs. A like sum was bequeathed to the Academy of Sciences.

French Vital Statistics for 1921

The secretary (minister) of labor recently published the official vital statistics for France for the year 1921. It is an unfavorable report from every point of view. The number of births is below that of 1920, while the number of deaths has increased; the number of marriages has also decreased. The excess of births over deaths, amounting to 159,790 in 1920, or forty-one for each 10,000 inhabitants, decreased in 1921 to 117,023, or thirty for each 10,000 inhabitants.

A comparison of the number of births and deaths for the years 1921, 1920 and 1913 is shown in the following table:

Year	Total Population	Births	Deaths	Excess of Births
1921	39,209,766	813,396	696,373	117,023
1920	39,209,766	834,411	674,621	159,790
1913	41,476,272	790,355	731,441	58,914

The number of marriages, which reached an unusually high figure in 1920 (623,869), dropped in 1921 to 456,221, but it is still appreciably higher than the number recorded in 1913 (312,036).

An examination of the report brings out the fact that, whereas the number of living births for each 10,000 inhabitants in 1920 was 213, it fell in 1921 to 207; in 1913, it was 191. The relative proportion of deaths has risen from 172 for each 10,000 inhabitants in 1920 to 177 in 1921, reaching about the same proportion that was recorded in 1913—176 for each 10,000 inhabitants.

In 1921, sixty-seven of the French departments showed an excess of births over deaths, the total amounting to 127,654, as compared with seventy-three departments in 1920. On the other hand, twenty-three departments showed an excess of deaths over births, the total amounting to 10,631, as against seventeen departments in 1920. The seven departments which, in 1920, showed an excess of births over deaths but in which the balance in 1921 was on the side of the deaths are: Aube, Cher, Côte-d'Or, Maine-et-Loire, Orne, Seine-et-Marne and Seine-et-Oise. In the department of Isère, which in 1920 showed an excess of deaths over births, the excess of births over deaths in 1921 was 292. During the year just preceding the war (1913), an excess of births over deaths amounting to a total of 86,768 for fifty-two departments was recorded, and an excess of deaths over births amounting to 27,854 was found in the thirty-eight other departments.

The departments in which the excess of births over deaths, in 1921, reached the highest figures are: Nord, Seine, Pas-de-Calais, Finistère, Moselle, Bas-Rhin, Seine-Inférieure, Côtes-du-Nord, Morbihan, Haut-Rhin, Aisne, Meurthe-et-Moselle, Ardennes and Bouches-du-Rhône. In all these departments, with the exception of Aisne, Meurthe-et-Moselle and Ardennes, the excess of births in 1921 was much less than in 1920.

The departments in which the excess of deaths over births, in 1921, was highest are: Yonne, Var, Gers, Lot, Lot-et-Garonne, Maine-et-Loire, Nièvre, Hautes-Pyrénées, Seine-et-Oise, Puy-de-Dôme, Vaucluse, Cher and Allier. In all these departments, with the exception of Puy-de-Dôme and Allier, the excess of deaths in 1921 was greater than in 1920; three of these departments, Maine-et-Loire, Seine-et-Oise and Cher, had shown an excess of births over deaths in 1920.

In 1920 (the figures for 1921 are not as yet available), Germany, exclusive of Wurttemberg and Mecklenburg, showed an excess of births over deaths amounting to 623,367; in 1919, the excess of births was 282,230, and in 1918 there was an excess of deaths over births of 299,885. In England, the excess of births for 1920 was 491,781, and for 1921, 390,355.

The State Treasury and the So-Called Indemnities of Hospital Physicians and Surgeons

In a great number of cities, the department for the collection of income tax has demanded a report from the administrative departments of hospitals in regard to the amount of "indemnities" received by the members of the medical and surgical staffs, with a view to subjecting them to taxation. *Les hôpitaux de France*, a medical journal representing the hospitals, protests against this action on the part of the government authorities, and points out that, as the term "indemnities" signifies, the sums so received have not the character of regular compensation or salaries. They cannot be compared with the salaries of a professor or a government official. Such sums are simply intended to indemnify the physician for the expenses of transportation, for time spent at the hospital and for care given to indigent patients.

The Coming Surgical Congress

The thirty-first congress of the Association française de chirurgie will be held in Paris, October 2-7, under the chairmanship of Dr. H. Hartmann, professor of clinical surgery in the medical department of the University of Paris. The subjects to be discussed at the congress are: (1) present-day results from bone grafting, by Professor Cunéo of Paris, and Dr. Rouvillois, member of the army medical corps; (2) remote results of operations affecting the trunk nerves, by Professor Leriche of Lyons, and Dr. Paul Moure of Paris, and (3) technic and results of extirpation of tumors of the large intestine (rectum excepted), by Drs. Abadie of Oran, and Okinczyc of Paris.

Parliament in Relation to the Campaign Against Alcoholism

A delegation of the Sociétés antialcooliques françaises was presented recently to the minister of public health, Monsieur Paul Strauss, by Monsieur Edouard Soulier, member of the chamber of deputies, and secretary of the "groupe antialcoolique" of that legislative body. The delegation informed the minister that the Ligue nationale contre l'alcoolisme will celebrate its fiftieth anniversary by a "semaine antialcoolique," Oct. 9-15, 1922. The representatives of the temperance movement requested the minister of public health to restore the annual appropriation of 20,000 francs (suppressed last year) with which to carry on the campaign against alcoholism. The general secretary of the Ligue nationale contre l'alcoolisme also asked the minister for his support for the establishment of a home for the treatment of inebriates.

Dangers of Intramuscular Injections of Arsphenamin

At the first congress of French-speaking dermatologists and syphilologists, recently held in Paris, the subject of intramuscular and subcutaneous injections of arsphenamin was discussed. Some time ago, Sicard stated that, with a given amount of neo-arsphenamin, injected within a certain period of time, intramuscular injections of small doses, given daily or every two days, will give a security and a therapeutic activity, together with a degree of innocuousness, that cannot be secured by weekly intravenous injections. Syphilologists (Queyrat, Milian, Pinard, Leredde), who deal mainly with recent cases of syphilis, have preferred intravenous injection of large doses; whereas the neurologists are in favor of subcutaneous or intramuscular injections of small doses, repeated and extending over longer periods of time, on the ground that they are more effective and that the dan-

ger element is thus to a great extent eliminated. The latter form of injections has met with great favor also among general practitioners. However, that the risk is really lessened has been questioned by some, and Sicard himself admits that even with this mode of treatment some cases of intolerance arise, as well as with the weekly intravenous injections; namely, when the total amount injected is very high—above 7 or 8 gm., for example. Dr. Petges of Bordeaux reported a case of grave apoplexy, occurring on the third day, and also several cases of nitritoid crises, which he had had an opportunity to observe following intramuscular injection of arsenicals. He holds that the danger from intravenous injections is less grave because it is, as it were, *"plus loyal"* (more manifest). Accidents occur usually a short time after the injection, so that the physician is ready to combat them; whereas, in the case of intramuscular injections, accidents do not manifest themselves until late—five or six hours after the injection—and hence cannot be combated successfully. Dr. Emery reports having seen grave nitritoid crises several hours after subcutaneous injection of the arsphenamins. According to Dr. Balzer and Dr. Marcel Pinard, intramuscular injections may be regarded as harmless in small doses only; beginning with 0.45 gm., the risk becomes the same as with intravenous injections.

MADRID

(From Our Regular Correspondent)

July 1, 1922.

Bone Vascularization

Professor Lexer of Freiburg recently lectured at the Madrid Medical School on the vascularization of bones. He exhibited roentgenograms of bones in which he had previously injected mercury and other opaque materials. He was thus enabled to follow the formation of the vascular system in the bones of several mammals and of man at different ages, in health and in several pathologic conditions that involved the bone system. A feature in childhood is the marked vascularization of the metaphyses, which contributes to bone formation. As growth advances, this metaphyseal vascularization decreases, being replaced by an increase in the nutrient artery, which before was barely perceptible. This intense vascularization in the metaphyses explains the abundance of pathologic processes in them. Professor Lexer showed a femur amputated for synovial tuberculosis of the knee, in which the enlargements in the branches of the nutrient artery suggested an extravascular leakage of the opaque fluid employed to make roentgenograms; and a histologic study of the specimen demonstrated afterward that this was all due to a tuberculous arteritis. The vascular engorgement apparent in some cases of joint tuberculosis shows how useless Bier's hyperemia method must prove in joint tuberculosis.

The epiphyseal vessels make their way into the bone with the interarticular ligaments and joint capsules. The metaphyseal vessels go in with the capsular and periarticular ligaments, and finally, the periosteal circulation has an enormous importance because the periosteum is essential for bone regeneration. When there is no periosteum in transplanted bones, connective tissue replaces bone, but this connective tissue does not become bone. Some writers have suggested that the vascularization of bone explains by itself the formation of callus in fractures and its changes. In ordinary fractures, a part of the bone is nourished by the nutrient artery, which may be more or less damaged but remains permeable, and the other end of the bone receives the metaphyseal, epiphyseal and periosteal vessels. Occasionally, however, the nutrient artery is impaired or destroyed, and then the vascularization of the distal fragment decreases, causing the formation of pseudarthrosis, owing to the fact that the callus is invaded by connective tissue.

The studies of bone vascularization made by Lexer change the modern conception of the reestablishment of bone mobility following fractures. It is well known that mobilization of fractured members begins almost immediately. Lexer has noted that vascularization is much more pronounced than in normal cases, during a period much longer than assumed, and that this congestion, which indicates a process of activity and regeneration, reaches its highest point in the fifth week. In order that this process of bone regeneration may suffer no interference, immobilization must be continued much longer than has been the practice lately. Patients must rest for six or eight months, and even longer. Lexer has thus succeeded in avoiding pseudarthrosis and osteoporosis, which threatened to cause the disappearance of bone, replacing it with connective tissue. Roentgenograms of bones that were losing their outline and opacity when exercised, and that recovered when allowed to rest, were the best demonstration of the correctness of Lexer's view. Bier stated that the callus of fractures was formed or stimulated by hormones from the marrow. Lexer denies this action by such hormones and attributes the formation of callus in fractures only to bone and periosteal vessels.

In concluding, he exhibited some recent patients with bone transplantations. Most of them were autotransplantations, and one was a homotransplant—a transplantation of a piece of bone from another man who had died in an accident. This bone piece "took," and the roentgenograms made two years afterward disclosed an apparently normal bone. Lexer has done wonders in bone transplantation, and many cripples, through his efforts, have gained a possibility of life and activity that seemed lost.

Disturbances in the Madrid Medical School

The Madrid Medical School has long been a focus of rivalries and jealousies that sometimes come to the surface in a most scandalous form, as happened recently. An examining board, made up of four professors of anatomy and having Cajal as its chairman, decided to recommend Dr. Villa, one of the applicants, to fill a vacancy in the chair of descriptive anatomy. While they were voting, several students, urged by other professors, created a serious disturbance, which has been fully exploited in the newspapers and has attracted much attention. The board, at a previous session, had decided unanimously to recommend Villa for the vacancy, but several professors who were interested in another applicant exercised pressure on the chairman; and when it was his turn to vote, he stated that he did not think that any of the applicants were worthy to fill the vacant chair. At that moment, vegetables were thrown at the other members of the board, and they were also called vile names. The rioting became so violent that one of the members, Dr. Porpetta, the other professor of descriptive anatomy in Madrid, was hit on the head with a cane, and his life was saved only through the action of a policeman, who fired into the air. This police interference inside the medical school has displeased the partisans of university independence, although they do not trouble themselves to explain how they would have protected the lives of the board members since the school employees were unable to check the rioters. The students have seen how some persons have been appointed professors through political influence; they have seen jealousies prevailing among the teaching staff; they have seen several of the professors come to blows, and, in addition, they have been flattered by certain professors, eager to use them for their personal purposes. All this has brought about the greatest scandal ever recorded in the medical school in Madrid.

BUCHAREST

(From Our Regular Correspondent)

July 10, 1922.

The Prosecution of Quacks

The medical society's report contains a note with regard to some recent prosecutions of persons practicing without a license or engaged in the sale of quack medicines. They exposed a man who posed as a brother of a Paris University professor and pretended that he was a collaborator with this distinguished phthisiologist in the invention of an inhalation cure for tuberculosis. He opened a sanatorium with the financial aid of several rich merchants, and he attracted a great number of patients; so he employed two registered physicians. As the results of the society's work, however, he is now in prison for extorting money from the public by false pretenses. The society recently found a diploma mill in Jassy, where for a few thousand lei false diplomas were issued. Luckily enough, the establishment was discovered before any of the impostors could enter practice.

Fight Against Trachoma

In the newly occupied territories of Roumania, and particularly in the Banal, there are a great number of trachoma cases, chiefly among soldiers and schoolchildren. This fact has induced the ministry of public welfare to employ inspectors who will visit every school as soon as possible after the regular school year begins (September 1), examining the eyes of every child for traces of the disease, which, it is hoped, will yield through the efforts of the inspectors. Children suffering from trachoma will be kept from school until they have undergone an operation or had appropriate treatment. The health department of the board of education will perform the necessary operation and administer treatment without charge. A certificate from any reputable physician that treatment has begun will obtain readmission to the child. The schoolchildren who are to undergo operation will have to wait their turn at the new trachoma hospitals in Bucharest, Cluj, and Oradia-Mare. It is believed that inspection of the children will reveal a great falling off in the number of trachoma cases. After the trachoma examination is completed, it is proposed to test the eyes of the schoolchildren for defective vision.

When to Allow Morphin in Heart Disease

Dr. Elfer, lecturer at the University of Cluj, said, at a recent meeting of the medical society of that town, that there is no reason to look on morphin in its usual therapeutic dose as a heart poison and to consider it contraindicated when a heart lesion is present. He states that sudden death may occur after the use of morphin, but that this is just as unavoidable as collapse in chloroform narcosis. Great care is, however, necessary when respiratory complications exist, especially if these are acute, and also in acute processes of the endocardium and myocardium. Morphin can be employed without fear in purely nervous disturbances, especially in nervous angina pectoris; and in organic angina small doses are indicated. The drug should never be withheld in chronic cardiac dyspnea, and in excited and sleepless patients it plays an important rôle as a sedative before digitalis therapy is begun, as advised by Grossmann in Germany.

Lessened Mortality Among Young Children

The health department of the university of public welfare has the following to say regarding the low mortality from contagious diseases of childhood and, as a consequence, the low general death rate for the country. Only one death each from diphtheria and measles, two from scarlet fever, and two from whooping cough were reported during June. Since the first of the year, there have been twenty-nine deaths from diphtheria; during the corresponding period of 1921, there were 171 deaths from diphtheria. Deaths from scarlet fever show a decrease of 47 per cent. For whooping cough, there was a mortality of 241 in 1920, and of forty-eight in 1921, a decrease of 80 per cent. The gross mortality of the four principal contagious diseases of childhood is strongly on the decrease.

Public Disinfection of Houses

Experimental and bacteriologic investigations have shown that the most effective method for use in routine house disinfection is the direct application, by means of an atomizer, of formaldehyd, five parts of a 40 per cent. solution to ninety-five parts water, approximately a 2 per cent. solution of formaldehyd gas in water, to all the surfaces of the rooms. A machine devised in the laboratory throws a finely divided stream a distance of 8 feet (2.4 meters). For each 1,000 cubic feet (20 cubic meters), an amount of the solution equal to a pint (0.5 liters) of the 40 per cent. formaldehyd is used. Tests show 100 per cent. of surface disinfection and more than 85 per cent. of test objects containing various bacteria. Because of the possible presence of protozoa in the houses occupied by smallpox patients, the foregoing process was for a time supplemented by the burning of a new substance, containing sulphur. This was finally abandoned because of the lack of means for readily determining its efficiency, and also because of its destructive effect on certain articles of furniture.

BERLIN

(From Our Regular Correspondent)

July 14, 1922.

Campaign Against the Noise Evil

When Americans visit Germany, and more particularly, Prussia, they often give expression to their displeasure over the punctilious paternal control by state and municipal officials of all movements and actions of the general public. On one occasion, I heard an American physician express his astonishment on observing that at the railway stations passengers are prevented by the station officials from boarding at the last moment a departing train. He stated that such a thing was unheard of in the United States. In response to my question as to whether there were not accidents as a result of such uncontrolled freedom of movement, he admitted that there were. We may perhaps place in the same category the attempts of the authorities to reduce to a minimum disturbing noises. We have police ordinances and court rulings on which the general public may base claims for protection against musical performances before open windows, against immoderate beating of carpets or against prolonged and disturbing use of machines, and many other noises of a disquieting nature. Some examples of the application of such ordinances are given by the chief state's attorney, Ebermayer, in the current issue of the *Deutsche medizinische Wochenschrift*. For example, the proprietor of an ocean beach hotel was restrained from allowing meat bones to be chopped up in his kitchen before 8 a. m., on the ground that the noise exerted a harmful effect on the health of nervous frequenters of the resort, who resided near by. In another instance, the operation of circular saws in a residence section in which many brain workers resided was prohibited by the authorities. From this decision, an appeal was taken to a higher court, and the judgment was reversed, it being urged by the expert witnesses that if the operation of the saws were confined to the periods between 9 a. m. and noon, and between 4 and 6 p. m., the claim that an impairment of health resulted from the inordinate noise could not be estab-

lished and that therefore a prohibition covering all hours of the day was not justifiable. It is interesting to note that in the litigation of this case it was brought out that the police power can be invoked not only when the general public is disturbed but also when certain individuals are discommoded, and that it is not of material consequence whether the persons disturbed by the noise settled in the neighborhood before or after the disturbance in question was set up. By decisions of the Prussian Oberverwaltungsgericht, judgments holding that a bowling alley may not be operated after 10 p. m. and that musical renditions in a cabaret may not continue after 11 p. m. were confirmed. Another superior court decision, on the other hand, brings out certain limitations of police power: a claim that certain noises are disturbing cannot be made on the ground that a siesta following a midday meal is disturbed, that the leisure hours after the day's work are broken in on, or that mental work is interfered with by music. However, that a given noise constitutes a continued disturbance of the night's rest, which is to be regarded as beginning at 10 o'clock, is a valid cause for complaint. The ordinance forbidding prolonged beating of carpets was formerly considered applicable only to health resorts; but according to a decision rendered in 1915 by the Prussian supreme court such restraining ordinances are enforceable in Berlin as well.

The Question as to What Medical Fees Foreigners Should Be Charged

More particularly since the outbreak of the war, the reproach has been commonly heard in foreign countries that the Germans of the present day are out of tune with the rest of the world; but we have had abundant opportunity of countering with similar charges. We are sensible enough to recognize the fact that the reproach may be justifiable in many respects. Our critics, however, should beware lest they err by pointing out the mote in the eyes of their neighbors and failing to discover the beam in their own eye. In this connection, we have, for some time past, been reproached for charging foreigners higher prices than we charge our own countrymen. This applies not only to books and other scientific publications that are commonly exported, but also to other German products. It applies to the settlements between German physicians and foreign patients sojourning in Germany. German physicians are being accused of extortion and rapacity, and no attempt is made to consider the actual economic or even the psychologic basis of the situation. It is quite generally recognized that the large influx of foreigners into Germany, for the summer or a more prolonged stay, brings with it certain economic advantages, in that a considerable amount of foreign money is thus bronght into the country. On the other hand, even a mere superficial observation of existing conditions reveals that there are great disadvantages associated with the advantages. The very limited supply of foodstuffs and industrial products now available in Germany is rendered still less adequate for the home-born, owing to the presence of the large number of foreigners whose demands have to be met. The foreigners buy in large quantities because everything is vastly cheaper here than in their own country. Thus, the scarcity of provisions and other products is caused, in part, by the presence of the foreigners. Another disadvantage lies in the fact that the foreigners carry about with them large quantities of the depreciated German currency, which they expend extravagantly, thus bringing about an upward tendency in the prices of all products on which the home-born are dependent. If in the hotels of the large cities and the health resorts a charge for board and room of 850 marks ($1.70, at the present rate of exchange) per day is made, or if for a night's lodging even 700 marks ($1.40) is charged, it will be admitted that these prices are ridiculously low as compared with the prices charged in the simplest hotels in the United States. Is it any wonder that the Germans try to protect themselves, at least in part, against the aforementioned evils by charging foreigners higher prices than they do their countrymen? In the case of the learned professions, another factor of a psychologic nature enters into the case. To a physician, for example, it seems degrading if he is called on to accept for a consultation given a foreigner a sum of money which, in the foreigner's native land, the elevator boy would not be content to receive as a tip. These are some of the reasons why the German physicians have of late been charging foreigners higher fees than formerly. One would suppose that Americans, above all others, since they are reputed to take a frank and open attitude toward the realities of life and do not, as a rule, allow themselves to be swayed by sentimentalities, would easily comprehend the situation. After the explanations here given have been weighed carefully, the action of the executive committee of the Berlin-Brandenburg *Aerztekammer* in supplying all physicians who desire it with the following placard (printed in four different languages), to be hung up in their offices, will be better understood:

To Our Foreign Patients: In agreement with the conceptions of foreign physicians, the physicians of Berlin charge foreign patients from countries in which there has been little or no depreciation of money values the same fees for medical services that they would pay in their home country. An exception will be made in favor of such foreigners as have taken up their residence in Germany and are practicing a profession or following their calling here in this country.

It is planned to publish a pamphlet which will give the fees charged in foreign lands for various types of medical service. A distinction will be made as to whether the patient is in moderate circumstances or financially well situated; also as to whether the service was performed by a general practitioner, a specialist or an expert of first rank. In this connection, it may be well to mention the following points as brought out in the *Berliner Aerztekorrespondenz:* 1. Whenever possible, before service is rendered, an agreement should be reached in regard to the fee. 2. All bills should be made out in German marks. 3. Foreigners who have taken up their permanent residence in Germany and are earning their livelihood here, receiving their income direct in the form of German marks, will pay such fees as their financial circumstances will warrant. The same rule will apply to members of foreign commissions for whom the government is under obligations to furnish free medical service in case of illness.

Marriages

Roderick Hoffman Shippey to Mrs Stella B. Murphy, both of Long Beach, Calif., at Santa Barbara, Calif., July 3.

Frederick Hubbell Mills, Major, M. C., U. S. Army, to Miss Alice Lillian Small, at Albany, N. Y., July 8.

William Lowndes McDougall, New York, to Miss Mary Alice Thomas of Griffin, Ga., June 20.

James Edwin Purdy, Pittsburgh, to Miss Edith Funston Ballentine of Philadelphia, June 24.

Louis Francisco Ross to Miss Margaret Grubbs Starr, both of Richmond, Ind., July 19.

Edward John Gray to Miss Marjory Ramage, both of Vancouver, B. C., Canada, July 10.

James Beyel Heller, Jr., to Miss Martha Silliman Cole, both of Pottsville, Pa., recently.

Martin L. D. Meyer, Chicago, to Miss Hortense Schroeppel of Collinsville, Ill., July 25.

Charles W. L. Johnson to Miss Ella Blackiston Conway, both of Baltimore, July 12.

Deaths

Frank Barbour Wynn ✱ Indianapolis; Medical College of Ohio, University of Cincinnati, 1885; was killed in a fall on Mount Siyeh, Glacier Park, Montana, July 17. It is reported that the fall was the result of a cerebral hemorrhage. Dr. Wynn was born in Franklin County, Indiana, May 28, 1860. He was graduated from De Pauw University in 1883, and received his medical degree two years later. In 1886 he was made master of arts by De Pauw University. From 1886 to 1888 he served as assistant physician in the Ohio Asylum for the Insane; in 1891, he served on the staff of the Northern Hospital for the Insane at Logansport, Ind. Following this work, he studied abroad, and on his return in 1893, located in Indianapolis, becoming the first city sanitarian in 1895. At this time also, he became professor of medical diagnosis in Indiana University School of Medicine, holding the position until the time of his death. Dr. Wynn was chairman of the Indianapolis Civic Commission in 1910, and was active in civic affairs in Indiana, serving as chairman of the Indiana Centennial Commission from 1911 to 1916, and as president of the Indiana Historical Society. He was formerly president of the Indiana Medical Society, and of his local medical organization. In the American Medical Association, Dr. Wynn served as a member of the House of Delegates in 1913 and 1914; he was secretary of the section on pathology and physiology in 1900 and chairman in 1901. The first scientific exhibit of the American Medical Association held in connection with the annual session was in the name of the Indiana State Association, and was organized by and conducted under the management of Dr. Wynn. This exhibit was presented at Columbus, Ohio, in 1899. Such an exhibit has been a feature of the annual session since that time, and Dr. Wynn served as director up to and including 1916. He was elected Vice President of the American Medical Association at the Boston session, holding the office during 1921-1922. At the time of his death, he was president of the American Alpine Club. During the last twenty-five years, he spent many of his vacations in mountain-climbing expeditions, and he held records for many attempts at scaling the mountains in Glacier National Park. Dr. Wynn was one of the best loved physicians in his state, and a man of broad community and scientific interests.

Philip **Francis Harvey** ✱ M. C., U. S. Army, Denver; State University of Iowa College of Medicine, Iowa City, Iowa, 1864; Bellevue Hospital Medical College, New York, 1866; joined as assistant surgeon, U. S. Army, 1868; served in the Medical Corps during the Civil War, Sioux Indian Wars, the Spanish-American War and during the Philippine Insurrection; professor of surgery at the National University Medical Department, Washington, D. C., 1866-1868; retired, Dec. 4, 1908; member of the Association of Military Surgeons, Society of Foreign Wars and the Society of the Army of the Potomac; died, June 7, aged 78. Dr. Harvey, when chief surgeon of the Department of the Lakes in 1905, introduced for the first time in the Army a prophylactic system for the elimination of venereal disease.

Isadore N. Bloom ✱ Louisville, Ky.; Medical School of Harvard University, Boston, 1881; professor of dermatology and syphilology at the University of Louisville Medical Department, Louisville, Ky.; on the staffs of the Louisville City and Jewish Hospitals; served for several terms as president of the school board; member of the American Urological Association; died, July 16, at the "Norways" Sanitarium, Indianapolis, aged 63.

Edward John Bermingham, New York; Medical Department of Columbia College, New York, 1873; founder and superintendent of the New York Throat, Nose and Lung Hospital; former president of the New York Academy of Medicine and of the Society of Medical Jurisprudence; died, July 15, aged 69, from diabetes and heart disease.

William H. Monday, Terrell, Texas; Medical College of Louisiana, New Orleans, 1871; member of the State Medical Association of Texas; Civil War Veteran; for several years president of the school board; at one time president of the Kaufman County Medical Association; died suddenly, July 16, aged 79.

Edwin R. Rasely ✱ Uniontown, Pa.; Medico-Chirurgical College of Philadelphia, 1891; member of the American Roentgen Ray Society; was found dead in his photographic dark room, accidentally electrocuted, July 12, aged 55.

✱ Indicates "Fellow" of the American Medical Association.

Frank W. Garrett, Liberty Center, Ind.; Medical Department, Butler University, Indianapolis, 1882; member of the Indiana State Medical Association; formerly a druggist; at one time postmaster and health officer of Liberty Center; died, July 17, aged 66, from carcinoma.

Abner S. Crocker, Oklahoma City; Medical Department, University of Louisville, 1890; member of the Oklahoma State Medical Association; died at the State University Hospital, July 13, aged 54, from a bullet wound in the lung, having accidentally shot himself.

Joseph Michael Gallen ✱ Columbus, Ohio; Ohio Medical University, Columbus, 1907; formerly instructor of surgery at the Ohio State University College of Medicine; on the staff of St. Francis Hospital; died, July 11, aged 37, from chronic nephritis.

Aaron Hendrick Connett, Great Bend, Kan.; College of Physicians and Surgeons, Keokuk, Iowa, 1878; member of the Kansas Medical Society; for several years county coroner, health officer and physician; died, July 17, aged 72, from paresis.

William P. Norris, Salem, Va.; Louisville Medical College, Louisville, Ky., 1892; member of the Medical Society of Virginia; for several years county coroner and health officer of Salem; died suddenly, July 23, aged 55, from heart disease.

Thomas Venable Bond, Fort Steilacoom, Wash.; University of Virginia, Department of Medicine, Charlottesville, Va., 1905; member of the Washington State Medical Association; died, June 23, aged 43, from tuberculosis.

Hyman Shlappin, Newark, N. J.; University and Bellevue Hospital Medical College, New York, 1910; member of the Medical Society of New Jersey; on the staff of the Newark Beth Israel Hospital; died, July 16, aged 38.

William Albert Gartner ✱ Troy, Kan.; Ensworth Medical College, St. Joseph, Mo., 1914; died, June 30, at the Missouri Methodist Hospital Association, St. Joseph, Mo., aged 38, from septicemia, following an insect bite.

Peter White Cody, Boston; College of Physicians and Surgeons, Keokuk, Iowa, 1882; member of the Massachusetts Medical Society; died, July 15, aged 64, from the effects of a fall received some time ago.

John William McKone, Lawler, Iowa; University of Iowa College of Medicine, Iowa City, Iowa, 1896; member of the Iowa State Medical Society; died, July 16, aged 48, from chronic interstitial nephritis.

Louis C. Swartzlander, Omaha; John A. Creighton Medical College, Omaha, 1906; member of the Nebraska State Medical Association; died suddenly, July 17, aged 39, from heart disease.

Henry Green, Yakima, Wash. (licensed, Washington, 1888); Confederate veteran; formerly member of the state legislature; died, July 10, aged 99, from senility.

John H. Hussey, Eddyville, Ky.; Medical Department, University of Tennessee, 1883; member of the Kentucky State Medical Association; died, July 14, aged 61.

Lewis Moody, Bremerton, Wash.; Medical Department, University of Illinois, Chicago, 1900; died, May 9, aged 41, from cerebral hemorrhage.

George Lewis Day ✱ Lone Tree, Iowa; State University of Iowa College of Medicine, Iowa City, Iowa, 1895; died suddenly, July 20, aged 51.

Britton O. Watkins, Kingston, Tenn.; Medical Department University of Tennessee, 1891; died, June 30, aged 68, from pulmonary tuberculosis.

Craig Worth ✱ Mapleton, Iowa; University of Missouri School of Medicine, Columbia, Mo., 1906; died, July 16, at Independence, aged 42.

Samuel D. Geissinger, Elmira, N. Y.; Jefferson Medical College, Philadelphia, 1877; died, March 14, aged 73, from heart disease.

Annetta Kratz, Danboro, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1871; died, May 28, aged 75.

Isaac Newton Wear, Los Angeles (licensed, Illinois, years of practice); died, July 9, aged 70, from heart disease.

Eugenia Julia Reinhardt, Denver; Denver Homeopathic College, 1897; died, June 30, aged 55, from ascites.

W. D. Penn, Gulfport, Miss. (licensed, years of practice); died, June 14, aged 82, from senility.

Elmer Elsworth Cowdrick, Cleveland; Chicago Medical College, 1886; died, June 22, aged 60.

The Propaganda for Reform

In This Department Appear Reports of The Journal's Bureau of Investigation, of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other General Material of an Informative Nature

ETO-SO-ERC

Intravenous Creosote Medication of T. M. Berry

A circular, signed T. M. Berry, M.D., New Orleans, recommends the intravenous use of "Eto-So-Erc" ("Creosote" spelled backward) for various conditions. It reads in part:

"*Dear Doctor:* From my past ten years experience of intravenous medication, I feel justified in calling your attention to the potential effects of Eto-So-Erc intravenously. Eto-So-Erc is a highly purified form of Beechwood creosote, especially prepared for intravenous administration. It comes in direct contact and becomes fixed to the pathologic tissue and bacteria.

"The antiseptic effects are positive.

"The beneficial effects are rapid and recognized by the patient.

"The administration is safe and accurate as to dosage.

"There is no reaction or alarming symptoms.

"Recommended in the treatment of: All stages of pulmonary tuberculosis, influenza, pneumonia, acute and chronic bronchitis, pulmonary gangrene, or any pulmonary inflammation where you feel a pulmonary antiseptic is desired. . . .

"Guttmann states that Tubercle Bacilli are destroyed by blood containing one part of creosote in 2,000 and even one half that proportion arrests their development: 20 c.c. of Eto-So-Erc gives you 1 to 2000 in a 150 lb. man."

Creosote is credited with being of some value in tuberculous infections when taken orally, although even on this point clinical opinion is divided. The benefits, according to Sollmann, are to be seen only in early cases of tuberculosis, if the use is long continued and if it does not cause gastrointestinal disturbances. It is most probable that any benefits derived may be referred to the local effect on the alimentary canal and on the bronchitis and to the antipyretic action. In such cases, the benefits would not be obtained by intravenous injections of creosote such as in the proprietary "Eto-So-Erc." In fact, the administration of creosote by other ways than mouth is said to be very much less efficacious (Cushny, "Pharmacology and Therapeutics").

The argument advanced for "Eto-So-Erc" in respiratory infections is that "Tubercle Bacilli are destroyed by blood containing one part of creosote in 2000 and even one-half that proportion arrests their development: 20 cc of Eto-So-Erc gives you 1 to 2000 in a 150 lb. man." This assertion is misleading because the tubercle bacilli in the lungs are imbedded in the tissues and therefore are inaccessible to the creosote. As the Council on Pharmacy and Chemistry pointed out in 1915, there is no evidence that creosote excreted by the lungs is in sufficient quantities to have any germicidal action.

The formula for Eto-So-Erc is not given, although it is claimed that each 160 m. (10 c.c.) ampoule contains 10 m. of creosote; of what the remaining 93 per cent. is composed we are not told.

To give creosote, a readily absorbed drug, intravenously is irrational and unscientific. The claim that "creosote comes in direct contact and becomes fixed to the pathologic tissue and bacteria" and therefore Eto-So-Erc is to be used in all pulmonary diseases, is simply playing on credulity.

International Health Drive.—At the session of the National Conference of Social Work recently held at Providence, R. I., Dr. George E. Vincent, president of the Rockefeller Foundation, in an address stated that the health committee of the League of Nations, the League of Red Cross Societies, international scientific bodies and the International Health Board are in the field. Scientific research workers are in constant communication in many national centers, and governments are sending attachés of hygiene into one another's territories. Vital statistics on an international scale are being reported more accurately. Prompt notification of epidemics is being facilitated, and outposts against plague and other diseases are being stationed and supported.

Correspondence

"THE PLACE OF VERSION IN OBSTETRICS"

To the Editor:—I was rather surprised that The Journal should publish such an unfair criticism of a book as it did of "The Place of Version in Obstetrics" by Dr. Irving W. Potter (The Journal, July 1, 1922, p. 64).

First, the critic's bias was so great and his erudition so incomplete that he lost sight of the real aims of the book, namely, a more extended use of version and an improved technic. He assumes, with the assurance and omniscience of a deity, that Potter is left handed and that that is why he uses the left hand in delivery; while, as a matter of fact, he is right handed in all his work, but has found that the left hand is the best hand with which to make all deliveries when version is employed.

The illustrations (Figs. 36, 38 and 39) "show awkwardness" only to the inexperienced eye and to the casuist who is trying to multiply his own objections in something he thinks he understands, while in reality the subject is evidently entirely new to him. If your critic ever saw Dr. Potter make a version or will try himself to make one as directed by Potter, he will find that the position of the hands, as represented in the cuts, is not awkward, but the most natural one to take and the one Potter chose after making hundreds of versions by the right and the left hand.

Again, any man who has made versions knows that the water should be retained as long as possible to facilitate the maneuver, and by breaking the membranes, high up, this is accomplished. Therefore, "Levret's insistence on rupturing the membranes, low down, at the os is not sustained in the minds of all practical obstetricians" who have learned their obstetrics at the bedside and not at the library table.

The stretching or ironing out of the vagina, although practiced by Edgar and other men, is not the technic employed by Potter, and he has called special attention to it because, in his elective version, the vaginal outlet must be dilated thoroughly, under deep anesthesia, before the delivery can be undertaken.

So far as bringing down one leg or two legs, Potter has practiced both methods many, many times, and finds, mechanically, that the two legs are the best dilating wedge, notwithstanding "Mme. du Tertre's recommendations in 1677."

"Figure 15 is not a manifest error of art," although the picture, for teaching purposes, is a little exaggerated. It has never been shown in any book on midwifery, nor has your critic ever seen such an illustration, and yet the picture is taken from life, and shows that rotation always takes place from right to left or from left to right according to the position of the child, and is shown in the plate and Plate 17, as the body descends.

His criticism as to the indications for version, which are not defined by Potter, is fairly well taken, and in this matter honest men can differ in their practice and conclusions. Potter never uses forceps except on the after-coming head; and until it is proved, in the hands of other men, that his practice is more dangerous to mother and child, the question must be left in statu quo.

Dr. Potter was honest when he said he never broke a bone but once in a living child. He does not claim that he does not have intracranial injuries, but he believes that they are less in his practice than in that of other men, a point that again must be proved by further reports.

Because a book is small and simply a reprint of journal papers is no reason it is not worth reviewing, and particularly, since it contains a practice, although revolutionary, that is gradually being accepted, in a more or less modified way, by many of the best obstetricians in the country. Dr.

Potter is certainly teaching a new method in the delivery of the shoulder and arm and many other points which are brought out in the text of his book, if read by an open minded, qualified, practical obstetrician.

No matter how much we may differ from Potter in his general use of version, he has demonstrated that version is not as dangerous as we were taught to believe, and should be more often employed; and secondly, the men who are practicing this method say that it is a great advance over any other method previously practiced by them, even if it be something old, as is your critic's contention. A just and fair criticism of a book is what all fair minded men look for, and especially in an association journal.

The history of version was compiled by one of the most thorough and reputable medical abstract companies in this country, and surely their facilities and combined intelligence ranks with your erudite critic, and they would not have slighted any great authors in the past to make it appear that Potter "de novo originated his present ideas of podalic version."

H. E. HAYD, M.D., Buffalo.

[The letter of Dr. Hayd was referred to the reviewer of the book. He replies:]

Since reading Dr. Hayd's comments on the review of Potter's book on "Version," I have reread the volume in an endeavor to see the text in the light he tries to cast on it; but my views are unchanged by the critical inspection. If any misstatements of fact had crept in I would gladly correct them; but even if corrections were possible, the basic views expressed would be unaltered—namely, it is dangerous teaching that it is as safe routinely to deliver all women by operation as to await physiologic labor. As clearly as I can see from his meager statistics, he had 0.78 per cent. of his patients spontaneously delivered: it is not definitely stated, but we are left to surmise that these nine women delivered themselves before his arrival: 82 per cent. of his 1,130 cases in his last report were delivered by version; and if version was impossible, then 8.8 per cent. had cesarean sections: some 7 per cent. more had some other operative procedure employed for extraction, and why these last eighty-three patients were not subjected to cesarean sections is not stated, any more than the noteworthy absence of indications for his sections.

If Dr. Potter had written a book whose purpose was to advocate a more frequent resort to version in contrast to high forceps and cesarean sections done for minor obstetric complications there could be no criticism. Under such circumstances, the aim of the book would be appropriately "a more extended use of version"; but an author, as well as his proponents, has poor logic when it is defended that parturient women should be treated in one of three ways—spontaneous labor for those who terminate their labors before the arrival of the attendant, version in the vast majority, and cesarean section for those in whom version is considered contraindicated. As Dr. Potter makes a routine practice of operative delivery, he cannot offer indications for his versions or his sections other than the conservation of his time and strength, and incidentally to shorten the labors. Even if indications were offered, we would hold them specious for any obstetrician to have a full 99 per cent. of operative deliveries.

To quote Dr. Hayd: "Until it is proved, in the hands of other men, that his practice is more dangerous to mother and child, the question must be left in statu quo." In Professor Rucker's report on his experience with Potter's version in the *American Journal of Obstetrics and Gynecology* (**1**:574 [March] 1921), the author is enthusiastic for the method, yet his fetal mortality was from 12.1 to 17.55 per cent. according to "group"—a gross mortality of 14.5 per cent. Professor Rucker is the first Potter enthusiast to report his results—and is still enthusiastic when his fetal mortality is from two to three times the normal experience. If this is any criterion, we may only feel that the method has been tried and found wanting in safety or rationality.

To answer all of Dr. Hayd's comments would take much space, especially as his strictures are often not compatible with scientific obstetric thought: however, with the limited space available I offer these concrete statements of fact:

1. The historical data are correct so far as they go. There is a woful absence of facts which associate the steps in the so-called Potter's version with the originators of those steps, which leaves the implication that Potter originated them de novo. There is not one detail of his procedure which could not have been found in the literature.

2. It is so self evident that resistance of the soft parts should be overcome that it is common experience of obstetricians that they have ironed out the perineum these many years. The necessity is so self evident that to mention it is trite.

3. The dictum of one man who has a peculiar facility with one hand cannot refute that common experience dictates that a sane choice of the hand is dependent on the position of the child, or some particular exigency of the case. The ready success of version is dependent on so many factors (presentation, position, indications and anatomic factors) that it is irrational to expect that one fixed, set rule of conduct will fit every condition.

4. Peu, in 1694, practiced entering the hand between membranes and uterus, which Potter implies is his method. Any elementary student knows that some interval will elapse between the rupture of the membranes and retraction of the uterus—during which interval, even an hour or two, version is readily possible. To argue that Peu's method counts for a better version than when the rupture of the membrane takes place at the internal os, Levret's teaching, is puerility. To smear the vaginal contamination, which inevitably must occur from the internal hand to the mucosa of the uterus, is not safe obstetrics.

5. Paré recommended bringing down both legs. Common sense shows that a full breech will secure more dilatation than will one leg brought down, and much more than when both are brought down; essentially, their relationship is 1 : ¾ : ½ in dilating surface. We concede that when rapid extraction is demanded, better traction may be secured by pulling on both legs than on one.

6. Version is completed with the turning: thereafter, if no indication exists the delivery may be left to Nature, or at most "manual aid" may be employed. On the other hand, when delivery is imperatively demanded, rapid extraction should be employed. As Dr. Potter operates on normal women, "manual aid" is his method. There is nothing new to this.

7. Every operator has found occasion for delivering the anterior arm first. Common experience indicates that the posterior arm, in the majority of instances, may more easily and quickly be brought down than the anterior. This is so true that practically every authority recommends it; if the anterior arm may not easily be reached, the shoulders should be rotated so that the anterior arm becomes posterior, delivering it as such. Dr. Potter, therefore, has not originated a detail by bringing down the anterior arm as such; he merely attempts to contravene common experience by being different.

8. Figure 15 depicts a distinctly abnormal breech mechanism which is observed occasionally, especially in sacral posterior positions; this conforms to the general principles of certain occiput posterior cases, forecoming head. This is due to some disturbance of pelvic configuration (of the bones or pelvic

floor), and more commonly to factors which determine the rapid descent of the posterior hip, with its anterior rotation: again comparable to anterior rotation of the occiput posterior. Later, such rotation determines that the back shall be posterior before the shoulders enter the brim. In operative cases, if the attendant is not fully conversant with abnormal mechanisms, the pulling on the posterior leg will produce this maneuver. This accident may inevitably occur, but almost invariably it is a distinct *error of art*. As most authorities attempt to depict things as they should be, this illustration is largely new: however, in Ramsbotham's book, page 250, Figure 119, fifth American edition, 1849, this position is portrayed in sagittal view; the caption is different. There would be no issue on this score if Dr. Potter had noted that the illustration showed an abnormal rotation.

9. It is refreshing to secure the admission, which we trust Dr. Hayd gives authoritatively, that the historical data were supplied by an "abstract company." Is this the explanation of the absence of those grammatical errors in the history that are present in the clinic part of the book? In any event, the explanation does not make the compilation better, and does not excuse the author from advancing it as his own.

10. Dr. Potter's statement that he only once broke a bone of a living baby is based on such empiric absence of observation that it is misleading. If Dr. Hayd will read Dr. Potter's closing remarks in the *American Journal of Obstetrics and Gynecology* (**1**:642 [March] 1921), he will see the significance of my declaration. He there states, "Nor have I X-rayed or made inquiries to know whether there were fractures because I do not think it necessary. I know there were none." Injuries and fractures have had a definite incidence in both primary breech extraction and that of secondary breech (after version) in the hands of every obstetric expert who has lived. We must therefore discredit the statement of Dr. Potter, which may come from lack of routine observation. Dr. Potter would possibly have a definite incidence of fractures to report if a thorough routine examination were made of all his new-born babies.

In conclusion, we may but reiterate what was stated in the review. "The teaching, as given in this book, is dangerous and reprehensible; a rational, sane, obstetric thought is imperatively needed if conservation of mother and child are to be realized." An obstetric operative furor does irreparable harm by destroying lives needlessly.

[NOTE.—While it is not customary to publish responses to book reviews, and the reviewer's reply, space is given in this instance because of the importance of checking this radical trend in obstetrics.]

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

MODIFICATION OF ANTIRABIC VACCINE

To the Editor:—Please inform me as to the opinion of the best authorities with regard to the therapeutic efficiency (or prophylactic) of the Cummings Rabies Vaccine compared with that of the regular Pasteur antirabic vaccine, which is given in doses of increasing potency.

B. S. PENN, M.D., Humboldt, Tenn.

ANSWER.—In the series of special articles on biologic therapy published under the auspices of the Council on Pharmacy and Chemistry, A. M. Stimson (THE JOURNAL, Jan. 22, 1921, p. 241) wrote:

"The further treatment of the fixed virus in order to prepare the vaccine may proceed according to several recognized methods, the intent of which is either to accomplish graduation of the dosage, or to secure a further attenuation of virulence, to preserve against rapid deterioration, or merely to provide the material in a form convenient for use. Of these methods the most commonly employed are: emulsification of the virus and graded dilution in salt solution; reduction of virulence by slow desiccation for definite periods, followed by preservation in glycerin; removal of diffusible substances by dialysis [the Cummings method]; rapid desiccation in a frozen condition, and treatment by various chemicals, notably by phenol. The advocates of each of these methods can adduce arguments as to the convenience, economy or suitability for some special purpose of the method which they employ; but it is believed that there is no acceptable evidence to show that any one method is preeminently more efficacious in conferring immunity to rabies than others. Some methods have, however, been subjected to more extensive practical application than others.

"Whatever the method employed, the final substance to be used for injection consists of a liquid suspension of more or less modified fixed virus; and this is administered in a series of subcutaneous injections, given for a period of time which may vary according to the method used, up to a maximum of three weeks. It has been found possible, and is theoretically advantageous, to modify the schema of injections employed originally by Pasteur in using the virus attenuated by slow desiccation. For example, the plan of injections now employed in the Hygienic Laboratory, U. S. Public Health Service, eliminates the use of long dried and presumably inert material, while retaining roughly Pasteur's idea of administering a succession of courses of injections of increasing virulence. This schema is admittedly arbitrary, and is supported more by the evidence of long usage than by strictly scientific considerations."

ENURESIS

To the Editor:—Kindly send me any information you have as to the treatment of bed wetting in children and young adults. I would appreciate greatly some references for this condition or remedies for it.

G. N. PEASE, M.D., Portland, Ore.

ANSWER.—A reply to this inquiry appeared in THE JOURNAL, Jan. 29, 1921, page 329.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 5. Sec., Dr. Harry C. DeVighne, Juneau.

MASSACHUSETTS: Boston, Sept. 12-14. Sec., Dr. Samuel H. Calderwood, State House, Boston.

NEW HAMPSHIRE: Concord, Sept. 7-8. Sec., Dr. Charles Duncan, Concord.

Kansas June Examination

Dr. Albert S. Ross, secretary, Kansas State Board of Medical Registration and Examination, reports the written examination held at Kansas City, June 20-21, 1922. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 24 candidates examined, 22 passed and 2 failed. Twenty-two candidates were licensed by reciprocity. One candidate was licensed on government credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Northwestern University		(1922)*	86
Rush Medical College		(1922)*	86.4
University of Kansas		(1922)	81.5, 81.7, 83, 83.6, 83.6, 83.8, 84.2, 84.5, 84.6, 84.6, 84.8, 85.6, 85.7, 85.7, 86.7, 86.7, 87.5
Harvard University		(1916)	83
Washington University		(1920) 83, (1921)	84.6
	FAILED		
Meharry Medical College		(1921)	65.9, 71

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Chicago College of Medicine and Surgery		(1913)	Iowa
Hahnemann Medical Coll. and Hosp. of Chicago		(1906)	Illinois
Loyola University		(1916) Missouri, (1917), (1919)	Illinois
Northwestern University		(1917), (1921)	Illinois
University of Louisville Medical Dept.		(1922)	Kentucky
Tulane University		(1914)	Missouri
Barnes Medical College		(1904)	Iowa
Kansas City Medical College		(1883)	Missouri
Marion-Sims College of Medicine		(1897)	Missouri
St. Louis University School of Medicine		(1921, 2)	Missouri
Washington University		(1918)	Missouri
Creighton University		(1921)	Nebraska
University of Nebraska		(1920)	Nebraska

University of Oklahoma	(1921)	Oklahoma
Jefferson Medical College	(1921)	Missouri
Vanderbilt University	(1921)	Tennessee
Fort Worth School of Medicine	(1918)	Texas
University of Toronto	(1908)	N. Dakota

ENDORSEMENT OF CREDENTIALS

College	Year Grad.	Endorsement with
Kansas City Medical College	(1898)	U. S. Army

* These candidates have finished the medical course and will obtain the M.D. degree after they have completed a year's internship in a hospital.

Delaware June Examination

Dr. P. S. Downs, secretary, Delaware State Board of Medical Examiners, reports the oral, written and practical examination held at Wilmington, June 20, 1922. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Nine candidates were examined, all of whom passed. Two candidates were licensed by reciprocity. One candidate, a graduate of the University of London in 1919, was licensed by special examination, Jan. 14, 1922. The following colleges were represented:

PASSED

College	Year Grad.	Number Licensed
Johns Hopkins University	(1922)	1
University of Maryland	(1920)	1
Jefferson Medical College	(1921)	1
Temple University	(1921)	3
University of Pennsylvania	(1922)	3

LICENSED BY RECIPROCITY

College	Year Grad.	Reciprocity with
University of Maryland	(1919)	Maryland
University of Pennsylvania	(1919)	Hawaii

Louisiana June Examination

Dr. Roy B. Harrison, secretary, Louisiana State Board of Medical Examiners, reports the written examination held at New Orleans, June 8-10, 1922. The examination covered 12 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 46 candidates examined, 43 passed and 3 failed. Four candidates were licensed by reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Tulane University	(1921) 86, 86.6, 87, 91.4, (1922) 77.8, 79.3, 79.8, 80.3, 82.3,* 82.7, 83.3, 83.4, 83.5, 83.6, 83.9, 84.2, 84.5, 84.8, 85.1, 85.2, 85.5, 86.3, 86.4, 86.4, 87.4, 87.5, 87.7, 88, 88, 88.1, 88.4, 88.6, 89.2, 89.2, 89.4, 89.8, 90.1, 90.2, 90.4, 91.3, 93.3	
St. Louis University School of Medicine	(1921)	85.9
University of Naples	(1915)*, †	85.7

FAILED

Meharry Medical College	(1915) 63, (1917) 53.3, (1921)	59.5

LICENSED BY RECIPROCITY

College	Year Grad.	Reciprocity with
Atlanta School of Medicine	(1906)	Georgia
Rush Medical College	(1909)	California
Tulane University	(1900)	Texas
University of Tennessee	(1919)	Mississippi

* Temporary licenses granted until completion of citizenship.
† Graduation not verified.

Church Missionary Society.—At a recent exhibition of the hospital facilities in lands far from civilization held in London, England, it was announced that the society now has thirty-seven mission hospitals, five of which have medical schools attached to them. There are leper establishments in connection with four of these hospitals; eight are equipped with modern roentgen-ray apparatus. Physicians are badly needed to continue the work. The hospital at Mengo, Uganda, British East Africa, contains 212 beds with separate blocks for Europeans. There is a large dispensary, pathologic laboratory, operating room and roentgen-ray room. A medical school for twenty-four students adjoins the building. A new maternity training school was recently opened and twenty young Baganda women are trained in midwifery yearly and receive a government diploma after examination as certified midwives. The Pakhoi Medical Mission Compound is situated 500 miles from Hong Kong, China, and has 210 beds, including a leper asylum containing 160 lepers, who are segregated and treated with chaulmoogra oil. One trained nurse (the only white trained nurse) is in charge of this institution, there being no physician there at present. Models of the Peshawar Medical Mission, the Cairo Mission Hospital and the Church Missionary Society's hospital at Kampele, Uganda, among others, were on view at the exposition.

Book Notices

DIE WASSERMANNSCHE REAKTION MIT BESONDERER BERÜCKSICHTIGUNG IHRER KLINISCHEN VERWERTBARKEIT. Von Dr. Harald Boas, Privatdozent an der Universität. Mit einem Vorwort von Geh.Med.-Rat. Prof. A. Wassermann. Third edition. Paper. Price, 36 marks. Pp. 176. Berlin: S. Karger, 1922.

This follows the lines of former editions. While there have not been many changes or additions, yet the extended personal experience of Boas with the Wassermann test has enabled him to draw valuable conclusions concerning the test. After a rather comprehensive historical review, Boas discusses the technic and details of the test, and describes many of the numerous modifications. He believes the simple alcoholic extract of human or beef heart the most reliable antigen, although he inclines to the belief that the cholesterolized antigens may be of value if properly controlled to rule out false positive findings. For the sake of completeness he discusses many of the tests which have been advanced as substitutes for the Wassermann test, and believes that the Sachs-Georgi and Meinicke tests are the best of these. The special merit of this little book is the discussion, based on the personal experience of the author, of the presence or absence of positive results in the various types of syphilis. From the standpoint of interpretation, Boas believes that a positive test should be regarded simply as a sign or symptom of syphilis, and that treatment should be guided by the presence or absence of positive tests. However, he warns against placing any reliance on a negative test, except when this appears after a vigorous course of treatment. In other words, a negative test cannot be understood as excluding syphilis. In the incubation period or in the initial stage of syphilis, a positive Wassermann test does not usually appear until shortly before the appearance of the secondary symptoms. In the secondary as well as in the tertiary stages, this test is almost constantly positive in the untreated cases, but may be negative in those cases in which early treatment has been given. In latent syphilis the results are variable, Boas inclining to the view that only the positive reactions have any diagnostic value. The same situation is found in tabes and in general paralysis, although the reaction tends to be positive in a greater percentage of cases than in the latent types of syphilis. As to the influence of treatment on the Wassermann test, Boas states that most cases gradually assume a negative condition under protracted treatment, but that treatment may, in some cases, render a negative case positive or strengthen the positivity of the reaction. Further, some cases assume a "Wassermann-fast" state under certain lines of treatment, so that such treatment must be replaced by other measures.

SURGICAL AND MECHANICAL TREATMENT OF PERIPHERAL NERVES. By Byron Stookey, A.M., M.D., Assistant Surgeon, New York Neurological Institute. With a Chapter on Nerve Degeneration and Regeneration by G. Carl Huber, M.D., Professor of Anatomy and Director of Anatomical Laboratories, University of Michigan. Cloth. Price, $10 net. Pp. 273, with 225 illustrations. Philadelphia: W. B. Saunders Company, 1922.

This is the first real effort that has been made to place the surgery of the peripheral nerves on the same plane with that of the brain and spinal cord. It is a thoroughly complete work, being based primarily on the fundamentals of anatomy, embryology and physiology. On every point the evidence has been formed from the best and most recent experimental work, and the conclusions have been drawn only after a careful analysis of the literature. The anatomy of peripheral nerves is dealt with in minute detail, particular stress being laid on their embryologic development. This is followed by a chapter on nerve degeneration and regeneration by G. Carl Huber, in which the progress of the experimental work is reviewed completely and clearly and so fairly that the reader can scarcely fail to secure a clear understanding of this field. The methods of nerve repair are ushered in by criticism of the old treatments and methods, after which the author elaborates in detail on the technic of nerve suture, nerve crossing and nerve transplantation. The methods of bridging a nerve gap, perhaps the most important subject

in nerve surgery from the practical point of view, are then reviewed and carefully analyzed. One is impressed with the vast amount of painstaking work that has been done on tubulization by Huber, whose researches since 1895 have so completely altered surgical methods along that line. The clinical aspect of the subject is then presented in all its phases, with the utmost care as to minute details. As stated in the author's preface, the various syndromes, motor, electrical and sensory, so elaborately treated by Tinel and Anasthasio-Bénisty, are not particularly emphasized, the great stress being laid on surgical and mechanical procedures suitable to the treatment of peripheral nerve injuries. Following an introductory chapter on indications for operation and the time to operate, the various nerves are taken up separately, and a most thorough analysis made of the various means of repairing injuries to them. One is constantly impressed with the close adherence to the experimental side and its bearing on the conclusions drawn. The facial nerve, the brachial plexus, the musculospiral, musculocutaneous, median, ulnar, lumbosacral plexus and sciatic nerves are dealt with in order, and in connection with each the normal anatomy, development, anomalies, types of injuries and detailed phases of the operative and mechanical treatment are beautifully presented. The remainder of the work is devoted to a brief discussion of the nerves less frequently injured, such as the recurrent laryngeal, spinal accessory, long thoracic, subscapular, anterior crural, obturator and gluteal, followed by a treatise on nerve tumors, causalgia and amputation neuromas. The author deserves unlimited credit for this careful reorganization of the subject of peripheral nerve surgery. If any criticism could be fairly made, it would be that there is a lack of clinical end-results to substantiate the principles on which the work is based.

LEHRBUCH KLINISCHER DIAGNOSTIK UND UNTERSUCHUNGSMETHODIK FÜR STUDIERENDE, MEDIZINALPRAKTIKANTEN UND AERZTE. Von Prof. Dr. Theodor Brugsch, Oberarzt der II. med. Univ.-Klinik in Berlin, und Prof. Dr. Alfred Schittenhelm, Direktor der med. Klinik Kiel. Fifth edition. Paper. Price, 390 marks. Pp. 968, with 432 illustrations. Berlin: Urban & Schwarzenberg, 1921.

This edition comprises almost 1,000 pages of closely printed and compact material covering every method of clinical and laboratory examination. One is reminded in perusing this volume of the monumental work of Sahli. The first part is devoted to general topics, such as anamnesis and physical examination. All the well known and latest mechanical means for diagnosis, as electrocardiography, phonocardiography and roentgenology, are discussed. The remainder is devoted to special methods used in the diagnosis of diseases of the various systems. The subject of immunology and infection is given considerable space. The attempt of the authors to cover as much ground as they do leads to an imbalance. It is impossible to enter into differential diagnosis, or to consider in more than the briefest manner the outstanding features of all diseases. This defect in the present edition might have been made less apparent by the elimination of a large number of tests which have outlived their usefulness, and the substitution of clinical data for them.

A LABORATORY MANUAL FOR COMPARATIVE VERTEBRATE ANATOMY. By Libbie H. Hyman, Department of Zoölogy, University of Chicago. Cloth. Price, $2.50, net. Pp. 380, with 69 illustrations. Chicago: University of Chicago Press, 1922.

This book meets a great need, for comparative anatomy teaching has not been well supplied with laboratory guides. It is a pity that the course outlined, or one equally good, is not part of the curriculum of all students preparing for medicine. The pedagogic policy followed is sound. The problems and needs of the student have been considered with exceptional care and breadth of view. Experience with different methods has proved that laboratory guides cannot be too definite. The success of a course is largely proportional to the thoroughness of the organization of the instruction. The experienced and open minded instructor will appreciate the effort made in this book to facilitate the acquirement of anatomic knowledge every student should have before beginning a medical course. The methods employed in this book do not appear to be inconsistent with the spirit of research. The student should be stimulated in scholarly ambition by the success which such a book should help him to attain. It is possible that, in brief courses, the average student may find too much detail. It may be necessary for the instructor in a short course to make limited selections. The so-called comparative plan, involving an arrangement by systems of organs rather than by types, is followed. The importance of a good knowledge of the skeleton is recognized, and there is a commendable phylogenetic point of view. There is much supplementary material, including a good glossary and a complete index. The reader's convenience is recognized usually, but not always, in the use of complete terms instead of letters in labeling illustrations.

THE CHILD AND THE HOME. Essays on the Rational Bringing-Up of Children. By Benzion Liber, M.D., Dr.P.H. Cloth. Price, $2.50. Pp. 253, with 2 illustrations. New York: Rational Living, 1922.

The fundamental text of Dr. Liber's book is the plea for absolute freedom of will to the child. He particularly attacks the cult of obedience, stating that the child is not the property of the parents, and owes them nothing, except friendship and affection if they deserve it. Presumably the judgment as to whether or not they deserve it rests entirely with the child. The writing is marred by frequent uses of involved Germanic constructions. The opinions are original, but too radical to be safe. There are two prefaces, one at the front of the book by Upton Sinclair, and one at the back of the book by teachers in the Modern School of Shelton, N. J. There is also a supplementary advertisement of Dr. Liber's independent magazine called *Rational Life*, which is devoted to such subjects as "Birth Control," "Drugless Treatment of Diseases" and "Vegetarianism." Most rational persons would differ with Dr. Liber's conception of the rational up-bringing of children.

Miscellany

SHEPPARD-TOWNER MATERNITY ACT REJECTED BY MAINE

The governor of Maine has rejected, on behalf of the state of Maine, the Sheppard-Towner Maternity Act. His rejection holds good at least until the next legislature convenes. In a proclamation, issued July 17, he said, in part:

"I believe the time has come for the states of the Union to hold to a principle and to carefully scrutinize all offers of 'federal aid' before accepting them. Having no doubt as to what my duty is in this matter, I decline to accept the Sheppard-Towner bill, and this state for the time being will stand with New York, Massachusetts and Rhode Island, the three states that have rejected it. The state of Maine will not sell its birthright; and principle, not expediency, has been the determining factor with me in the solution of this problem.

"The people of Maine are willing and able to care for their own mothers and children, and I have faith to believe that Maine men and women will do this rather than accept so-called gratuities from a federal bureau.

"The Sheppard-Towner bill is to be attacked in the courts by the commonwealth of Massachusetts, and eminent lawyers are of the opinion that the federal government has no power over the states in maternity and child welfare matters. There also is grave doubt as to whether or not the governor of a state has the power to accept the bill in question, even though Congress attempts to confer that power upon him. The governor of a state does not derive his authority from the federal government, and a federal bill that seeks to confer new power upon him is of questionable standing.

"The existing provisions of the Sheppard-Towner bill are reasonably moderate, but it properly may be assumed that attempts will be made to broaden its scope so as to further restrict the state's control over its own affairs. It is apparent that the present bill is but an entering wedge for more radical legislation, and Maine's delegation in Congress, our

senators and representatives, should be urged to resist all further encroachments upon the states by the federal government. Maine will loyally support the Union in all matters that come under the provisions of the federal constitution, but the time has arrived when the people of this state will jealously guard the rights inherent in them as a sovereign people, and will accept the responsibilities the possession of such rights imposes.

"In years gone by the state of Maine has not hesitated to stand for great principles, and it is well for the forty-four states that have accepted the Sheppard-Towner bill to know that Maine neither asks for, nor for the time being accepts, federal aid for its mothers and children."

DRINKING WATER ON TRAINS

The Interstate Quarantine Regulations require common carriers to provide water for drinking and culinary purposes that is of satisfactory sanitary quality; further, that cooled water shall be handled in such a manner as to prevent contact with the ice. The drinking water supplied in trains in the coach yards of Chicago and of other terminal cities of the Middle West was recently studied by A. E. Gorman, assistant sanitary engineer, U. S. Public Health Service. He found that the railroad companies in nearly every instance were making an honest effort to meet the requirements of the quarantine regulations. However, owing largely to a lack of understanding of sanitary practices, some yard and coach foremen were permitting serious insanitary practices. The most dangerous filth common to coach yards is fecal matter apparently dropped from the toilets of cars. These droppings are altogether too common, and when eliminated, a big factor in jeopardizing the drinking water supplied cars will be removed. Yard trainmen and other employees, Gorman recommends, should be forbidden to use the car toilets. Water tanks are filled usually by means of the ordinary garden hose, which in some yards is dragged along the ground from car to car with no protection to the ends. The hose is often leaky, or the free end may be frayed, and while it is being dragged, filth may enter the hose or contaminate the ends. In sterilizing water coolers, Gorman found that the cooler was often placed on the ground, over a short piece of air hose. Steam lines were seen in two instances in Chicago actually lying in fecal deposits. The steam table used by some yards is commendable. Handling ice for water coolers is difficult, and employees sometimes put small pieces of ice in the coolers that have not been washed after falling to the ground. Separate ice and water compartments will, when generally used, remove much of the danger from contaminated ice. But even when separate compartments were in use, ice was found in many cases in both compartments. Separate openings should be provided for filling ice and water compartments in coolers. Gorman believes that health officials and railroad officials should confer on the matter of standardizing coach yard design, and the manner of handling ice and water.

CONFERENCE ON VENEREAL DISEASES

The Northern European Red Cross Conference, which met in Copenhagen in May, 1921, and which comprised delegations from England, Germany, Holland, Denmark, Norway, Sweden and Finland, adopted, among others, the following resolutions:

The questions of compulsory notifications and of compulsory treatment, being dependent on the experience, resources and psychology of the people concerned in each country, must be decided by individual nations.

The regulation and official toleration of professional prostitution have been found to be medically useless as a check on the spread of venereal diseases, and may even prove positively harmful, tending as they do to give official sanction to a vicious traffic.

Enlightenment of the general public on lines which are best calculated to minimize exposure to infection, and which emphasize the necessity of thorough treatment, is an essential part of any scheme for the combating of venereal diseases. Instruction should particularly be addressed to parents and teachers in such a form as will enable them to give clear information on the reproduction of life and impress on adolescents the importance of individual responsibility to future generations. In the training of teachers, special courses on these subjects should be provided.

Medicolegal

Osteopath's License Held Properly Revoked

(Harlan v. Alderson et al. (Calif.), 203 Pac. R. 1014)

The District Court of Appeal of California, First District, Division 1, in reversing a judgment that annulled an order of the board of medical examiners which revoked respondent Harlan's license to practice osteopathy in that state, says that in 1916 he was granted a reciprocity certificate to practice osteopathy, and early in 1920 proceedings were initiated before the board by a verified complaint against the respondent, charging him with a violation of the ninth subdivision of Section 14 of Chapter 354 of the Statutes of 1913, as amended in 1915, 1917, and 1919. The uncontradicted evidence introduced at the hearing showed that he wrote prescriptions and performed both minor and major surgery and engaged in the unlicensed practice of medicine and surgery. The question presented to this court was whether or not the case fell within the provisions of Subdivision 9 of Section 14 of the Act of 1913, which provides what shall constitute misconduct which shall warrant the board of medical examiners in revoking a license granted under the provisions of this act, and which reads:

Ninth. The use, by the holder of a "drugless practitioner certificate," of drugs or what are known as medicinal preparations, in or upon any human being, or the severing or penetrating by the holder of said "drugless practitioner certificate" of the tissues of any human being in the treatment of any disease, injury, deformity, or other physical or mental condition of such human being, excepting the severing of the umbilical cord.

The court thinks it did so fall. The well-settled definitions of osteopathy, both in the decisions and in the dictionaries, uniformly hold that the system of osteopathy "uses no drugs. . . . It administers no drugs; it uses no knife. . . . As a remedy a form of manipulation is used." Wherefore, under the present classification, there can be no doubt that one holding an osteopath's license issued prior to the act of 1913, or subsequent thereto on the basis of a previously secured license from another state, would, if originally licensed in California since the Act of 1913, be licensed as a "drugless practitioner." And, by virtue of Section 21, proceedings for the revocation of a reciprocity certificate must be had under the section under which such certificate would have been issued if originally issued under the provisions of this act.

A hearing was denied by the Supreme Court of California.

Opinions of What Might Be Expected from Injuries

(Posch v. Payne, Director General of Railroads (Minn.), 186 N. W. R. 132)

The Supreme Court of Minnesota says that the plaintiff on alighting from a train, Oct. 25, 1919, fell on a sloping platform. A physician was called to attend her, and, mainly from complaint of pain, diagnosed the principal injury as an impacted fracture of the right leg. The plaintiff was treated accordingly. The evidence on the trial made it reasonably clear that the leg was not broken at all. Then, in June or early in July, 1920, the plaintiff became pregnant, and there was a miscarriage in September, which she claimed was a natural and proximate result of the injury. She also claimed that, as a result of her injury, which affected her nerves, she lost in a measure the sense of hearing in her left ear, although by the fall she suffered no injury to the ear, nor to her head, so far as the evidence showed. She was given a verdict for $10,000 damages. In reversing an order denying a new trial, the supreme court holds that it was prejudicial error to refuse requested instructions withdrawing the items of miscarriage and deafness from the consideration of the jury on the question of damages. That the accident or fall on the station platform so injured or disarranged the internal organs of the plaintiff as to render miscarriage more likely to result from pregnancy subsequently occurring was not shown by any reliable evidence, and the opinion of the medical expert to that effect was altogether too speculative and conjectural

to furnish a basis for legal liability against the original wrongdoer. The case would be entirely different had pregnancy existed at the time of the accident. And whatever deafness she experienced was but theoretically traced by her medical expert witness to the nervousness brought on as one of the results of the accident.

The opinions of medical experts as to conditions naturally to be anticipated and expected to follow from given personal injuries are of great value to courts as aids in the determination of questions of that character, and entitled to serious attention and consideration in the pronouncing of judgment thereon. Such opinions, however, are not controlling on the court, and the value and probative force thereof diminishes in proportion as the evidence indicates clearly to the practical lay mind a professional entry for support into the field of theoretical uncertainties and doubts. Such the court believes the field drawn from in this case by the expert, who attributed the plaintiff's subsequent ailments in the particulars stated as a probable consequence and result of the accident in alighting from the train at the time in question. For the error in submitting to the jury the elements of damage referred to, there must be a new trial.

Physician Entitled to Jury Trial on Claim

(In re Stein's Estate (N. Y.), 193 N. Y. Supp. 298)

The Supreme Court of New York, Appellate Division, Fourth Department, says that in December, 1918, a physician presented a verified claim against the estate of one Stein, deceased, for $81,461.01, for professional services rendered to said Stein under a contract. In April, 1919, the executor rejected the claim by written notice served on the claimant. More than a year elapsed, and nothing was done by the executor toward settling the estate or adjusting this claim; and in May, 1920, the claimant began a proceeding in the surrogate's court for an accounting. There was much delay on the part of the executor in filing his account, and many adjournments were had. Finally, a formal written demand for a jury trial of the issues was filed by the claimant. The surrogate determined that the claimant was entitled to have the issues tried by a jury as a matter of right, and made an order accordingly, which order is here affirmed. The claim was for professional services alleged to have been rendered by the claimant as a physician and based on a contract, and so long as he made claim for a sum of money only, the granting to him of the right to have the controverted issues of fact tried by a jury on the judicial settlement was simply affording a procedure in the surrogate's court similar to the procedure a claimant had always been entitled to adopt in a common law action in the supreme court of New York. The demand for a jury trial in this case was seasonably made and was never waived. The claimant had a right to bring his action in the supreme court within the time provided by statute, or have a trial in the surrogate's court on the judicial settlement of the estate; but with equal rights to a jury trial in both cases.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Oto-Laryngology, Minneapolis, Sept. 19-23. Dr. Luther C. Peter, 1529 Spruce St., Philadelphia, Sec'y.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Albany, N. Y., Sept. 19-21. Dr. James E. Davis, 111 Josephine Ave., Detroit, Secretary.

American Electro-Therapeutic Association, New York, Sept. 19-22. Dr. A. Bern Hirsh, 71 W. 94th St., New York, Secretary.

American Roentgen Ray Society, Los Angeles, Sept. 12-16. Dr. H. E. Potter, 122 S. Michigan Ave., Chicago, Secretary.

Indiana State Medical Association, Muncie, Sept. 27-29. Dr. Charles N. Combs, Terre Haute, Secretary.

Missouri Valley, Medical Society of the, St. Joseph, Mo., Sept. 21-22. Dr. Charles W. Fassett, 115 E. 31st St., Kansas City, Mo., Secretary.

Utah State Medical Association, Salt Lake City, Aug. 31-Sept. 2. Dr. W. L. Rich, Boston Bldg., Salt Lake City, Secretary.

Washington State Medical Association, Tacoma, Sept. 5-6. Dr. C. H. Thomson, 508 Cobb Bldg., Seattle, Secretary.

Wisconsin, State Medical Society of, Green Lake, Sept. 6-8. Dr. Rock Sleyster, Wauwatosa, Secretary.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Archives of Neurology and Psychiatry, Chicago

July, 1922, **8**, No. 1

*Chronic Epidemic Encephalitis. W. F. Schaller and J. Oliver, San Francisco.—p. 1.

*Sugar Content of Blood and Spinal Fluid in Epidemic Encephalitis. W. Thalhimer and H. Updegraff, Milwaukee.—p. 15.

Xanthochromia Due to Acute, Purulent Spinal Meningitis. G. Horrax, Boston.—p. 24.

*Use of Dyes in Localization of Spinal Cord Tumors at Operation. L. Selling, Portland, Ore.—p. 27.

*Cerebrospinal Fluid and Blood in Multiple Sclerosis. J. B. Ayer and H. E. Foster, Boston.—p. 31.

Symptomatology of Epidemic Encephalitis. F. Kennedy, T. K. Davis and G. H. Hyslop, New York.—p. 40.

*Exogenous Causes of Multiple Sclerosis. L. F. Barker, Baltimore.—p. 47.

*Multiple Sclerosis from Standpoint of Geographic Distribution. C. B. Davenport, Cold Spring Harbor, L. I., N. Y.—p. 51.

*Statistics of Multiple Sclerosis. I. S. Wechsler, New York.—p. 59.

Chronic Epidemic Encephalitis.—The case of epidemic encephalitis reported by Schaller and Oliver, representing both clinical and anatomic examinations, is of particular interest because of the persisting inflammatory brain changes after fourteen months, and also because complaints of abdominal pain, muscle spasm and gastric distress thought to be due to local causes ultimately led to an exploratory laparotomy. This exploration revealed no pathologic condition to account satisfactorily for the abdominal symptoms, and the final analysis of the case explained these symptoms as being due to brain lesions.

Sugar in Blood and Spinal Fluid in Epidemic Encephalitis.—Thalhimer and Updegraff found that in epidemic encephalitis the sugar content of the blood and spinal fluid is increased, but only after a certain level of blood sugar has been reached. At present hyperglycorrhachia can be used chiefly to differentiate epidemic encephalitis from the two conditions with which it is most likely to be confused—tuberculous meningitis and early poliomyelitis.

Localization of Spinal Cord Tumors by Dyes.—The method described by Selling consists of two steps: first, the demonstration of spinal subarachnoid block, by the Ayer method; second, the injection of a dye into the cisterna magna, or into the lumbar subarachnoid space. The injection is made immediately prior to operation. Assuming that the lumbar route has been used, the dye will diffuse through the subarachnoid space up to the lower pole of the tumor. The existence of a subarachnoid block will prevent its going beyond this point. If the laminectomy opening is below the tumor, on opening the dura a deep blue stained fluid will be encountered. The laminectomy must then be extended upward. If, on the other hand, the laminectomy has been above the level of the tumor, on opening the dura a colorless fluid will be encountered. The opening must then be continued downward.

Cerebrospinal Fluid in Multiple Sclerosis.—The spinal fluid findings in thirty-eight cases of multiple sclerosis, together with certain blood examinations in a number of these, are given by Ayer and Foster. They state that there is no single fluid test of paramount value in the diagnosis of multiple sclerosis. However, correlation of all tests ordinarily performed on the spinal fluid indicates that it is seldom entirely normal, and that in 50 per cent. of the cases of this series findings unusual in other diseases were obtained. This group of findings, which the authors consider important, is as follows: fluid of normal appearance, obtained under normal or low pressure as registered by the manometer, showing a slight increase in cells (lymphocytes and arachnoid mononuclears); total protein normal or only slightly increased; globulin, a slight trace or absent, and a paretic colloidal gold curve with a negative Wassermann reaction. Correlation with the clinical picture suggests that this type

of fluid indicates a progressive stage of multiple sclerosis. Conversely, normal or nearly normal fluids were found primarily in patients in whom no clinical progress had recently been apparent. Results of certain chemical studies designed to show disorders of metabolism in this disease, performed on blood and spinal fluid, were normal.

Exogenous Causes of Multiple Sclerosis.—The possible exogenous causes considered by Barker are: (1) the influence of earlier infections; (2) the influence of intoxications; (3) thermal and electrical influences, and (4) trauma. If the exogenous factors mentioned play any rôle at all in the etiology of the disease, Barker says, they must act either as predisposing influences for the true cause or as aggravators of a disease already started by the true cause.

Geographic Distribution of Multiple Sclerosis.—The results of the tabulation of multiple sclerosis as one of the defects found in drafted men are plotted by Davenport and the results discussed. It shows that the maximum rate for this disease was found in Michigan and Minnesota, in which there were eighteen persons with this disease per 100,000. Excepting Delaware and the District of Columbia (whose rates depend on one and two cases, respectively), the next highest ratio is that for Wisconsin, fourteen per 100,000. That these states with a high ratio for multiple sclerosis are adjacent states, bordering on the Great Lakes, is regarded by Davenport as of great interest. In discussing the etiology of this disease Davenport suggests that the factor of heredity cannot be left out of consideration.

Statistics of Multiple Sclerosis.—Wechsler's study is based on the records of 1,970 cases of multiple sclerosis and includes the infantile, congenital, familial and hereditary forms and the mental and psychic symptoms.

Archives of Occupational Therapy, Baltimore

June, 1922, **1**, No. 3

Psychology of Occupational Therapy. E. Bowman, Baltimore.—p. 171.
Scope of Occupational Therapy and Requirements for Training of Occupational Aides. E. G. Brackett.—p. 179.
Training of Occupational Aide. J. D. Adams, Boston.—p. 187.
Industrial Case from Accident Back to Job. H. B. Goodman, Milwaukee.—p. 193.
Experience with Tuberculous Patients. G. Sample.—p. 205.
Report of Round Table on Wood-Work and Their Finishings. A. H. Dean, St. Louis.—p. 215.
Fifth Annual Meeting of National Society for Promotion of Occupational Therapy.—p. 219.

Boston Medical and Surgical Journal

July 6, 1922, **187**, No. 1

Endometrial Hematomas of Ovary. J. V. Meigs, Boston.—p. 1.
*Social History in Relation to Heart Patients. W. D. Reid, Boston.—p. 13.
Modern Aspects of Acute Empyema. W. Whittemore, Boston.—p. 16.
Acute Ethmoiditis with Orbital Abscess. Case Report. H. J. Gibby, Worcester, Mass.—p. 19.
Heart Disease in Industry. W. I. Clark, Jr., Worcester, Mass.—p. 21.
*Infantile Heart in Adult Life. L. F. Bishop, New York.—p. 23.

Social History in Heart Disease.—Four cases are cited by Reid illustrating the importance of the social history in patients of an outpatient heart clinic. The social history often discloses why certain patients fail to make an expected improvement. At times the skilful utilization of such data greatly increases the therapeutic success achieved. The social history may contain information of value in the diagnosis of that type of patient held to have an "irritable heart." Attention to the social history opens up a big, broad, humanitarian side of the practice of medicine. Further justification of emphasis of the social history is found in that it keeps alive the fact that patients are not mere medical cases, but living human beings.

Infantile Heart in Adult Life.—The infantile heart, Bishop says, is met with as a recognizable condition from the tenth year onward. The man with an infantile heart can go as far as he will, without injury to the heart, because his wind gives out and he must stop. The syndrome of an infantile heart is a right predominance, sinus arrhythmia, a history of palpitation, and a soft blowing murmur above and to the left of the middle of the sternum. The fluoroscope usually shows besides a centrally located heart shadow, a fairly definite predominance in the region of the conus. An interesting problem has been the recognition of this condition in later life. On several occasions, Bishop says, he could surmise that this condition had existed in the early life of people who later developed extremely high blood pressures (230 and 240, and the like), which could not be accounted for in any way, and which were carried with an unusual degree of tolerance. They differ from the ordinary high blood pressure cases in that their hearts are not markedly the subject of a left predominance. There may even be a right predominance at an advanced age. A certain number of infantile hearts seem later to conform to the normal type. In other words, in popular language, the condition is outgrown.

California State Journal of Medicine, San Francisco

June, 1922, **20**, No. 6

Accomplishments and Problems of Medical Society of State of California. J. H. Graves, San Francisco.—p. 179.
Governmental Activities and Tendencies in Health Field. W. V. Brem, Los Angeles.—p. 181.
What General Practitioner Can Do to Improve Diagnosis and Treatment of Diseases of Children. L. Porter, San Francisco.—p. 185.
*Common Parasitic Dermatoses in Southern California. M. Scholtz, Los Angeles.—p. 190.
Factors Contributing to Success or Failure in Group Medicine. E. V. Frederick, Reno, Nev.—p. 192.
*Basic Diets in Treatment of Nephritis. W. D. Sansum, Santa Barbara. —p. 194.
Cardiac Dyspnea or Rather Cardiac Shortness of Breath. H. Spiro, San Francisco.—p. 198.
Place of Pathology in Practice of Medicine. W. V. Brem, Los Angeles. —p. 201.

Common Parasitic Dermatoses in Southern California.—Ectogenous parasitic dermatoses, according to Scholtz, make up about 30 per cent. of the total number of skin diseases in Southern California. The most widespread in the order of frequency are streptodermias, tinea, scabies and staphylodermias. Scholtz urges that a more thorough isolation of skin lesions caused by streptococci, staphylococci, tinea and scabies should be enforced in schools and in homes. A sanitary inspection of domestic animals, particularly dogs and cats, in all homes from which cases of tinea are reported, is highly desirable, as these animals seem to be the main agencies in spreading tinea. Cases of tinea and scabies should be reportable.

Basic Diet in Nephritis.—Sansum asserts that by the employment of what he terms a "basic diet," the urinary acidity may easily be reduced to a p_H of 7 or better. On such diets patients with chronic interstitial nephritis appear to improve, as evidenced by a decrease in blood pressure, albumin and casts in the urine and other symptoms of nephritis and arterial hypertension.

Endocrinology, Los Angeles

May, 1922, **6**, No. 3

Diabetes Insipidus; Its Pathogenesis and Therapeutics. T. Stenstrom, Lund, Sweden.—p. 365.
Pseudohermaphritic Cock. C. J. and C. Parhon, Roumania.—p. 383.
*Clinical Study of Patient Suffering from Intense Thirst and Polyuria (Diabetes Insipidus) and Presenting Roentgen-Ray Evidence of Malignant Processes in Cranial Bones, Possibly Late Metastases of Mammary Carcinoma. E. S. Cross, Baltimore.—p. 387.
Changes Produced in Larval Brain of Rana Pipiens by Thyroid Feeding. W. B. Cooksey, Lawrence, Kan.—p. 393.
Some Factors Which Modify Epinephrin Reaction. J. B. Collip, Toronto.—p. 402.

Diabetes Insipidus Symptoms Coincident with Breast Cancer Metastasis in Skull.—Cross' patient was a woman, aged 58, who complained chiefly of excessive thirst, of very frequent urination, of weakness, of peculiar morning vomiting and of marked disability in the lower part of the back. At 48 the left breast was removed by a competent surgeon because of a tumor, supposed to be a carcinoma. The present illness had its beginning seven months before consultation. Summing up the situation, the principal features were as follows: (1) loss of weight and strength; (2) gastric symptoms, including nausea, morning vomiting and anorexia; (3) polyuria and polydipsia; (4) disability of the spine. Of these, the fourth was easily explicable, apparently, on the

basis of roentgen-ray findings of infectious arthritis of the spine. No local cause had been found for the gastric symptoms. Urinary studies, blood findings and blood pressure were all rather against the polyuria being a manifestation of chronic nephritis, and there was nothing to suggest that it was of hysterical origin. Roentgen-ray studies of the skull showed scattered through the cranial bones, particularly in the parietal and frontal regions, numerous rarefied areas of bone destruction, showing no evidence of new bone formation; the process in the bones was apparently invasive in character, in every way resembling the changes in malignancy. The patient died on the third day of coma. Cross regards the case as one of multiple, malignant metastases in the bones of the skull, at the base of the brain, and, possibly, also in the lumbar spine. It is probable that the involvement of the base of the brain affected the mechanism regulating water metabolism, so that symptoms of mild diabetes insipidus developed. The origin of the metastases is uncertain, but it is quite possible that they were secondary to the breast cancer removed ten years before.

Florida Medical Association Journal, St. Augustine and Jacksonville

May, 1922, **8**, No. 11

Preventable Deformities of Lower Extremity. H. C. Dozier, Ft. Sheridan, Ill.—p. 195.
Diagnosis of Chronic Cholecystitis. R. R. Sullivan, Lakeland, Fla.—p. 207.

June, 1922, **8**, No. 12

Roentgen-Ray Treatment of Tonsils and Adenoids. L. W. Cunningham, Jacksonville.—p. 213.
Epilepsy Report of Cases of Apparent Cure Surgically. L. C. Fischer, Atlanta, Ga.—p. 214.
Trachoma and Conjunctival Folliculosis. A. K. Wilson, Jacksonville.—p. 219.

Indiana State Medical Association Journal, Ft. Wayne

May, 1922, **15**, No. 5

Streptococcic Osteomyelitis of Temporal Bone. H. Boyd-Snee, South Bend.—p. 147.
Some Problems in Syphilis. R. V. Hoffman, South Bend.—p. 152.
What General Practitioner Can Do in Otology. D. O. Kearby, Indianapolis.—p. 155.
Sand Bur in Larynx. G. F. Keiper, Lafayette.—p. 161.
Medical Sermon. F. E. Jackson, Indianapolis.—p. 163.

June, 1922, **15**, No. 6

Osteitis Fibrosa Cystica. V. H. Moon, Indianapolis.—p. 185.
Puerperal Eclampsia. J. Ketcham, Indianapolis.—p. 187.
Operative Injury of Hepatic and Common Bile Ducts. H. K. Bonn, Indianapolis.—p. 192.
Ludwig's Angina. W. F. Molt, Indianapolis.—p. 196.
Physical Inequality of School Children. G. W. Spohn, Elkhart.—p. 200.

Journal of Infectious Diseases, Chicago

June, 1922, **30**, No. 6

*Occurrence of Endameba Histolytica with Tissue Lesions in Testis and Epididymis in Chronic Dysentery. A. S. Warthin.—p. 559.
*Excretion of Spirochaeta Pallida Through Kidneys. A. S. Warthin.—p. 569.
Staining of Spirochetes in Cover Glass Smears by Silver-Agar Method. A. S. Warthin and A. C. Starry, Ann Arbor, Mich.—p. 592.
*Unusual Case of Nocardiosis. G. R. Callender and J. F. Coupal, Washington, D. C.—p. 601.
Peculiar Failure of Hemolytic Action in Strain of Hemolytic Streptococcus. E. Valentine, New York.—p. 610.
Bacteriologic Studies of Gastric Fractions Obtained by Rehfuss Method. N. Kopeloff, New York.—p. 613.
Precipitin Reaction in Determination of Infectivity of Gonorrheal Discharges. M. F. Kelley.—p. 623.
*Ameba-Like Organism in Kidneys of Child. L. Jackson, Chicago.—p. 636.
Bacteriophage Phenomena with Staphylococcus Aureus. B. R. Callow, New York.—p. 643.
Hydrogen-Ion Studies. III. Hydrogen-Ion Changes in Agglutination of Bacteria by Immune Serum. E. F. Hirsch, Chicago.—p. 651.
Id. IV. Changes in Reaction Accompanying Precipitation of Colloidal Gold by Spinal Fluid (Lange Test). E. F. Hirsch.—p. 658.
Id. V. Changes in Reaction of Blood in Experimental Infections. E. F. Hirsch and J. L. Williams, Chicago.—p. 664.
Id. VI. Hydrogen-Ion Changes on Precipitation of Human Serum by Immune Serum. E. F. Hirsch, Chicago.—p. 666.
Production of Lung Hemorrhages and Associated Phenomena in Rabbits and Guinea-Pigs. S. E. Branham, Chicago.—p. 670.

Endameba Histolytica in Testes in Dysentery.—Warthin's case presents the unique occurrence of the metastasis of *Endameba histolytica* to epididymides and testes with definite, though slight, local lesions in these organs, in a patient affected for many years with amebic dysentery, at the time of death nearly completely healed, with disappearance of amebas from the stools. It is the first recorded instance of such a localization of *Endameba histolytica*, and presents additional evidence of the mildly pathogenic character of this parasite, in the slight tissue destruction caused by it and its phagocytosis of red blood cells and spermatozoa. A point of some interest is the localization of the small lesions in the rete testes and tubuli efferentes, with long streaming clots extending upward into the epididymis, the amebas being held within these clots. In the dilated semen filled portions of the epididymis the organisms were found in greater numbers and free in the semen. Their commensal character is shown by the phagocytosis of red blood cells in the clots, and by that of spermatozoa in the semen particularly; that is, they show the same tendency in the semen to feed on substances contained in it as they do on the substances in the intestinal contents.

Excretion of Spirochete by Kidneys.—In three cases of congenital syphilis studied by Warthin, one of a child dying at birth, another dying eight days after birth, and the third at 3½ years of age, the kidneys presented an unusual degree of spirochete localization with definite lesions. In two cases of acquired syphilis, those of a young man with a roseolar eruption and a young woman with maculopapular eruption, both dying from arsphenamin poisoning, a similar localization of spirochetes in the kidneys with positive evidences of excretion through the renal epithelium into the tubules was observed. Identical conditions and changes were present in all five of these cases. No arsphenamin treatment had been administered to the patient with the congenital case dying soon after birth or to the child of 3½ years; but it had been given to the child dying at 8 days of age, and the death was supposed to have been due to the treatment. The child of 3½ years of age had albuminuria and symptoms suggesting poliomyelitis; the young woman of 23 years had casts and albuminuria; the urine of the young man had not been examined. He was suppo edly in good condition, except for the chancre and the roseolar eruption.

Nocardiosis of Lung.—The patient whose case is cited by Callender and Coupal, two years before death, inhaled into his right bronchus a chicken vertebra. He minimized the importance of the size of the bone and repeated roentgen-ray examinations failed to reveal it. A few months after the accident the patient had a severe attack of "influenza" with pneumonia, which was especially localized on the right side. A year later there was a train of symptoms of the same character. During the interim the patient was in comparatively good health. Following this second attack until his death (a period of seven months) the patient gradually failed. He had a cough, high temperature, pain in the right side and shortness of breath. Bacteriologic examinations were negative but physical examination and roentgenograms indicated a tuberculous process. Two weeks before death there was evidence of embolic processes as indicated by the cerebral attack and the abscess on the leg. Signs were found of old tuberculosis of the apexes. It is impossible to determine accurately the exact onset of the infection with nocardia. It seems not unreasonable to suppose that the focus of diminished resistance produced by the bone in the bronchus gave a satisfactory lodging place for this organism, which probably came from the mouth and that it slowly developed during the last seven months of the patient's life, then by its formation of abscesses it gained access to the blood stream and produced a nocardial pyemia during the last two weeks. The organism belongs to the streptothrix group and is a rather unusual type in that it is apparently an absolute anaerobe.

Ameba in Kidneys.—An ameba-like organism, the apparent cause of an acute parenchymatous nephritis, was found by Jackson in the kidneys of a child, 15 months old, who died suddenly in a convulsion. Neither the gross nor histologic examination of the tissues revealed any other apparently sufficient cause of death. Three reports are found in the literature of the occurrence of somewhat similar organisms in the kidneys, twice in syphilitic fetuses and once in a stillborn, nonsyphilitic child.

Journal of Urology, Baltimore

June, 1922, **7**, No. 6

Some Disputed Points Regarding Prostatectomy. A. L. Chute, Boston.—p. 417.
Pneumoperitoneum in Kidney Diagnosis with Special Reference to Detection of Retroperitoneal Masses. L. R. Sante, St. Louis.—p. 451.
Extension of Hypernephroma by Way of Renal Vein. L. D. Keyser and G. S. Foulds, Rochester, Minn.—p. 463.
Relation of Colon Bacilli of Fenal Infections to Strains from Other Sources and Observations on Hemolytic Colon Bacilli. R. D. Herrold, Chicago.—p. 473.
Pyelitis of Pregnancy. W. G. Sexton, Marshfield, Wis.—p. 481.
New Sign in Diagnosis of Ureteral Stones. B. Lewis, St. Louis.—p. 487.
Human Bladder Muscle Under Increased Tension. J. C. Baldwin, Baltimore.—p. 499.
Scrotal Bandages. C. W. Collings, New York.—p. 501.

Michigan State Medical Society Journal, Grand Rapids

June, 1922, **21**, No. 6

Hygiene, Public Health and Physical Education at University of Michigan. J. Sundwall, Ann Arbor.—p. 235.
*Complications of Diabetes Mellitus. P. L. Marsh, Ann Arbor.—p. 238.
*Case of Portal Cirrhosis in Child, with Operation (Talma-Morrison). M. B. Kay and N. Ginsburg, Detroit.—p. 244.
Actinotherapy in Infection. A. E. Schiller, Detroit.—p. 247.
*Convalescent Human Serum in Treatment of Severe Cases of Scarlet Fever; Review of Literature. B. Bernbaum, Detroit.—p. 249.
*Treatment of Diphtheria by Intravenous Injections of Diphtheria Antitoxin. H. K. Sachs, Detroit.—p. 252.
Quartz Light Therapy in Pelvic Inflammation. L. C. Donnelly, Detroit.—p. 254.

Complications of Diabetes Mellitus.—The more important complications of diabetes mellitus are discussed by Marsh. It is pointed out that some of the complications are important because of their effect on the diabetes, some because of the effect of the diabetes on the complications and some because they are distressing to the patient and may be fatal. The importance of prophylaxis of most of these complications by thorough dietetic treatment of even the mildest cases of diabetes is emphasized. Attention is called to the fact that success in the treatment of complications may be expected only if the diabetes is kept under control.

Portal Cirrhosis in Child with Operation.—The case reported by Kay and Ginsberg is one of the undoubted cases of alcoholic cirrhosis and in addition is a presentation of the only case of cirrhosis of the liver in childhood that has been treated by the Talma-Morrison operation (though with a fatal outcome). The boy, aged 11, developed the habit of taking drinks of an alcoholic beverage, which he described as vodka, stating that it was very strong and hard to take at first, but he soon became accustomed to it and learned to take it and enjoy it, receiving a small glassful three times a day. He never reached the stage of intoxication. His drinking periods extended over three months a year for three years. The father noticed that the boy's abdomen began to enlarge and as he aptly put it, "the belly got bigger and the boy littler." The size of the abdomen increased steadily. During this period the boy had periodic attacks of vomiting. On one occasion hematemesis occurred. Emaciation had been continuous and rather marked, accompanied by an increasing cachexia.

Convalescent Human Serum in Treatment of Scarlet Fever.—Bernbaum reports on an analysis of thirty-nine cases of scarlet fever treated at the Herman Kiefer Hospital with convalescent serum for the year ending July 1, 1921. Thirty-two patients lived and seven died. Of the seven who died, two were practically moribund, one died within twenty-one hours and the other eighteen hours after entrance; one after eight days of acute hemorrhagic nephritis, one after eight days of septic complications. Three died of toxemia. Two of these received only 10 c.c. of serum and one 20 c.c. Of the thirty-two surviving cases, twenty were toxic and twelve had septic complications. The average dose was from 10 to 35 c.c., intramuscularly. The serum was administered from the third to the eighth day of the disease. Children responded as well as adults. Eighteen cases were treated so far the fiscal year, beginning July 1, 1921. These were the most severe of all cases of scarlet fever admitted since that date. Of these eighteen, five died. One died of pneumonia and sepsis after two weeks. One died in twenty-four hours from myocardial failure. One died of general sepsis following extensive adenitis. One was sick one week before entrance, came into hospital almost moribund and died within fourteen hours. One died of toxemia, but had received only 30 c.c. of blood, which is equivalent to about 10 to 12 c.c. of serum. Even some of these cases showed improvement after the administration of serum. Of the thirteen recovered cases, four were of the pure toxic type. The blood was taken from healthy donors, Wassermann negative in the fourth or fifth week of the disease. The serum was injected intramuscularly in all cases. The blood was obtained from the median cephalic vein of the donors by the syringe method or into a mouth suction bottle. Fresh whole blood, citrated whole blood, centrifuged citrated blood, serum from defibrinated blood, citrated blood run through a Berkefield filter and decanted serum after standing were used. The effect from the serum obtained in any way was identical.

Diphtheria Antitoxin Administered Intravenously.—Sachs states that antitoxin should be given intravenously only in severe cases in which there are present excessive membrane and toxemia.

New York Medical Journal and Medical Record

July 5, 1922, **116**, No. 1

Radium Therapy in Certain Gynecologic Conditions. S. Tousey, New York.—p. 1.
Uses of Radium in Gynecology. T. H. Cherry, New York.—p. 6.
*Two Complicated Deliveries Requiring Cesarean Section. J. C. Applegate, Philadelphia.—p. 9.
Once Cesarean Always Cesarean. E. B. Piper, Philadelphia.—p. 10.
Résumé of Some Recent Advances in Gynecology. W. T. Dannreuther, New York.—p. 12.
*Carcinoma of Cervix Uteri in Nulliparous Woman. F. C. Hammond, Philadelphia.—p. 14.
Suppurating Uterine Myoma. W. E. Darnall, Atlantic City, N. J.—p. 17.
Etiology of Eclampsia. W. L. Culbertson, Philadelphia.—p. 19.
Ascertaining Viability of Fetus. L. Drosin, New York.—p. 20.
Natural Limit of Duration of Human Gestation. J. Oliver, London, Eng.—p. 22.
Tuberculosis and Pregnancy. H. Schwatt, New York.—p. 24.
Gonorrhea in Women from Aspect of Focal Infection. F. W. Langstroth, New York.—p. 26.
*Ovarian Therapy in Involutional Melancholia. E. A. Strecker and B. L. Keyes, Philadelphia.—p. 30.
One Hundred Cases of Postpartum Hemorrhage. M. Hornstein, New York.—p. 34.
*Case of Pregnancy Following Menopause. M. L. Brandt, New York.—p. 38.
Plea for Oophorotomy on All Pathologic Ovaries and Resection of Disease Tissue. S. Rottenberg and G. Schwartz, New York.—p. 39.
New Virgin Vaginal Speculum. G. E. Garnes, Herkimer, N. Y.—p. 40.

Two Cases of Cesarean Section.—One of Applegate's patients had a large uterine fibroid, the nature of the dystocia being undetermined in the beginning; the other case was a breech presentation in a primipara with a pelvis below normal in dimensions and a fetal head oversize and greatly out of proportion to the pelvis.

Carcinoma of Cervix in Nullipara.—Hammond reports nine cases. Only one of the patients was under 30. He urges that a careful history be taken of every case of pelvic disease, more especially when bleeding is a symptom, and, the physician must not be influenced by the age or social status of the woman; when making a pelvic examination, the patient must be approached with the firm determination of making a positive diagnosis.

Ovarian Therapy in Involutional Melancholia.—Although no definite connection between any of the symptoms of so-called involutional depression and ovarian function has been determined by Strecker and Keyes, it seems probable that in a limited number of patients the injection of ovarian extracts exerts a favorable influence on the general physical status and perhaps more particularly it lowers and stabilizes the blood pressure, while possibly in a small group a corresponding helpful influence is exerted on the course of the psychosis. The most important and definite physical changes resulting from experiments made on all fourteen patients were a drop in diastolic blood pressure and in eleven patients a drop in systolic pressure; ten patients gained in weight, six improved markedly in appetite, six showed improvement in quantity and quality of sleep, one reestablished menstruation after an absence of seventeen months, in one there developed a decided improvement in troublesome menstrual manifesta-

tions, and eight showed rise in the percentage of eosinophils. No one patient is any worse than before medication started and there is a noticeable improvement in the general physical condition of the group as a whole.

Pregnancy Following Menopause.—Brandt found only five other authentic cases of pregnancy occurring after menopause in the literature. His patient was 46 years of age. Her last menstrual period occurred in June, 1916. In May, 1919, she was delivered of a male child weighing 9 pounds. Incidentally, this child showed all the signs of achondroplasia. Ten months after the birth of the child, the patient, after weaning the baby, began to menstruate and had three normal periods. The menses have not returned since then.

Philippine Islands Medical Association Journal, Manila

March-April, 1922, **2**, No. 2

*Incidence of Diabetes Mellitus Among Filippinos. I. Concepcion.—p. 57.
Ruptures of Gastro-Intestinal Tract. M. P. Mendoza-Guazon.—p. 63.
Induced Abortion from Medico-Legal Point of View. M. Tolentino and G. Rustia.—p. 66.
Bilateral Optic Atrophy Associated with Certain Meningitic Symptoms; Report of Case. F. Nicolas.—p. 70.
Edema of Vulva in Labor. A. Villarama.—p. 73.

Incidence of Diabetes Mellitus Among Filipinos.—Concepcion shows that the mortality of diabetes mellitus in the city of Manila has gradually been increasing from year to year, especially within the last few years. This increase is only apparent, due to a greater accuracy of vital statistics. There is no reason to believe that increased consumption of sugar is one of the main factors responsible for the greater frequency of diabetes in the last few years. At least this supposition will not hold true in the city of Manila as there is no corresponding increase in mortality from diabetes due to the increased consumption of sugar per capita. The incidence of diabetes in the Philippines is very much less than in other countries, including Japan. The disease is most frequent between the ages of 40 and 50 among Filipinos. This is also true among Japanese and Chinese. Among Europeans it occurs most commonly between 50 and 70. The slight difference may be explained by the early maturity of Orientals as compared with Europeans. Diabetes mellitus as it occurs among Filipinos is of a milder type than among Europeans and Americans. The mortality of those suffering from it is very low and only a small percentage die of diabetic coma. The low incidence of diabetes mellitus among Filipinos and other Orientals may be explained as due either to greater power of assimilation for sugar among these people compared with Europeans and Americans, or to the fact that they are less exposed to continuous nervous strain on account of their peculiar modes of living. It may also be due to some peculiar racial tendency or characteristic. This point is of interest, as in the Philippines the diet is largely carbohydrate; for that reason diabetes should be more frequent here than in other countries which, however, was found not to be the case.

Public Health Journal, Toronto

June, 1922, **13**, No. 6

Public Health Organization. J. Roberts, Hamilton, Ont.—p. 241.
System of Follow-Up Work for Tuberculosis. Z. Keifer, Toronto.—p. 251.
Drosophilids in Milk. E. A. Bruce, Agassiz, B. C.—p. 259.

Rhode Island Medical Journal, Providence

July, 1922, **5**, No. 7

Cancer of Stomach: End Results in Sixty-Five Cases. P. E. Truesdale, Fall River, Mass.—p. 269.
Diagnosis of Diseases of Scalp. R. Blosser, Providence, R. I.—p. 271.

Southwestern Medicine, Phoenix, Ariz.

June, 1922, **6**, No. 6

Gastric Polyposis. L. Bryan, San Francisco.—p. 223.
Perthe's Disease. Report of Case. R. J. Stroud, Temple, Ariz.—p. 227.
Ruptured Tubal Pregnancy; Report of Four Cases. C. E. Yount and H. T. Southworth, Prescott, Ariz.—p. 233.
Possibilities of Early Diagnosis of Tuberculous Kidney. B. Wright and G. Turner, El Paso, Tex.—p. 237.
Blood Chemistry: Report of Fifty Examinations. E. A. Newton, Los Angeles, Calif.—p. 240.
Fetal Dystocia from Faulty Attitude and Faulty Position. H. A. Reese, Bisbee, Ariz.—p. 245.

Surgery, Gynecology and Obstetrics, Chicago

July, 1922, **35**, No. 1

*Jejunal Ulcer Without Previous Gastro-Enterostomy. E. P. Richardson, Boston.—p. 1.
*Surgical Treatment of Perforated Ulcers of Stomach and Duodenum. G. Hromada and S. S. Newman, Vienna, Austria.—p. 11.
*Marginal Ulcer After Modified Polya Operation. J. P. Houguet and L. G. Cole, New York.—p. 19.
Megasigmoid, Megarectum, Fecal Bolus. F. G. Corbin, Mendoza, Argentine Republic.—p. 23.
*Recurrent Dislocation of Patella: Wilth Report of Sixteen Cases. W. R. MacAusland and A. F. Sargent, Boston.—p. 35.
Endeavor to Evaluate Chronic Sepsis in Pregnancy. J. E. Talbot, Worcester, Mass.—p. 42.
Ileostomy Following Resection of Colon. E. S. Judd and F. W. Rankin, Rochester, Minn.—p. 50.
Total Transposition of Viscera. H. H. Sherk, Pasadena, Calif.—p. 53.
*Germicidal Character of Emanations from Colloids of Certain Silver Salts. E. G. Ballenger and O. F. Elder, Atlanta, Ga.—p. 57.
Test of Labor. W. G. Lee, Chicago.—p. 63.
Roentgenography in Obstetrics. D. A. Horner, Chicago.—p. 67.
*Addison's Disease Complicating Pregnancy, Labor, or Puerperium. G. Fitz-Patrick, Chicago.—p. 72.
Adolescent Rickets. Report of Cases; Osteotomy for Genu Varum and Valgum. P. Lewin, Chicago.—p. 77.
*Chronic Bone Abscess. Its Treatment by Simple Evacuation Through Drill Hole. W. M. Brickner, New York.—p. 84.
Repair of Tendons in Fingers. S. Bunnell, San Francisco.—p. 88.
Posterior Dislocation of Foot with Posterior Marginal Fracture of Tibia and Uusually with Pott's Fracture of Fibula. T. T. Thomas, Philadelphia.—p. 98.
Self-Retaining, Easily Removable Drainage Tube. M. Ballin, Detroit.—p. 102.
Utilization of Pectineus Fascia in Certain Forms of Inguinal Hernia. W. D. Wise, Baltimore.—p. 103.
Use of Electric Cautery in Laryngeal Tuberculosis. G. B. Wood, Philadelphia.—p. 104.
Squamous-Cell Epithelioma of Lip. Its Surgical Indications. J. H. Shephard, San Jose, Calif.—p. 107.
Cholecystostomy or Cholecystectomy — Which? M. F. Porter, Ft. Wayne, Ind.—p. 110.

Spontaneous Jejunal Ulcer.—Twelve cases of spontaneous occurrence of peptic ulcer in the jejunum are cited by Richardson, ten being taken from the literature. Of the twelve cases, nine occurred between the ages of 45 and ten were in men. In five necropsies in which the condition of the whole bowel is mentioned, the jejunal ulcer was the only one present in the intestinal tract, excluding for these cases a general ulcerative process. In the remaining cases, only one intestinal ulcer was actually demonstrated although more might exist. In six cases, confirmed five times by necropsy, and once, in Richardson's case, by operative evidence and roentgen ray, the stomach and duodenum were apparently negative. Two cases showed a lesion of the duodenum or stomach. In four cases the condition of these organs is uncertain. The most frequent situation for the ulcer was within a few inches of the end of the duodenum, occurring there five times. The other ulcers lay between this point and the middle of the jejunum, or possibly lower. The ulcer in seven cases showed evidence of chronicity, and was associated three times with a definite stricture of the bowel. In two cases the ulcer seemed acute; in the remaining case the point is not clear. Perforation occurred ten times in the twelve cases. No definite etiology may be assigned to these cases. Richardson suggests the possibility that disturbance of pyloric control may lead to gastric contents reaching the jejunum without neutralization, and so to the formation of true peptic ulcer. For ulcers situated lower in the intestinal tract, this cause seems improbable. Since syphilis produces a form of intestinal ulceration which affects the jejunum more readily than the ileum, and also has a tendency to cicatricial contraction and perforation, it must be considered as a possible cause of ulceration in some of these cases, although definite confirmatory evidence is lacking. Two points are of particular importance in future cases: a careful microscopic study of the lesions, including if possible the mesenteric lymph nodes, and the determination of the presence or absence of syphilis.

Surgical Treatment of Stomach and Duodenum Ulcers.—Nineteen cases are reported by Hromada and Newman. Five patients died. All were admitted to the hospital showing clinically wide-spread, acute peritonitis. In all of the cases, the cause of illness was diagnosed before operation. In all cases resection of the stomach was done, and more than two-thirds of the stomach was removed, in two cases following

the Billroth method and in the rest the Kroenlein-Mikulicz method. The duration of time between perforation and operation was from one and one-fourth to thirty-six hours. All patients were given as little anesthetic as possible, morphin and ether being used. All other details—history, condition of patient, findings at operation, condition after operation, and reexamination—are mentioned in the report of cases. The ages ranged from 24 to 56 years, and the patients came from all walks of life—which has a bearing on the general state of the patient—nourishment and strength. The cases in which a good prognosis could be made were treated by nonradical resection, within the first twelve hours after perforation. Local anesthesia has no advantage. One patient died of an unusual complication—thrombosis of the subclavian artery with subsequent gangrene of the upper extremity—after having fully recovered from the peritonitis. The intestinal function was fully restored on the second day after operation, the patient did not vomit, he could even take fluid diet, and he had no pain whatever in the abdomen.

Marginal Ulcer Follows Polya Operation.—Hoguet and Cole assert that this is the only case of a marginal ulcer following a Polya operation recorded in literature. The clinical course of the formation of the second ulcer could be followed closely.

Recurrent Dislocation of Patella.—MacAusland and Sargent make eight operations as follows: An incision through the center of the patella tendon from the patella to the tubercle, cutting it off at this point on the outer half. This half is then quilted with chromic catgut No. 3, turned in under the inner remaining half and sutured in a bony groove as far as possible to the inner side, on the inner face of the tibia. The periosteum is then pulled over this insertion and the thin capsule pulled over these tendons.

Germicidal Value of Colloidal Silver Salts.—Colloidal silver salts, notably the chlorid, according to Ballenger and Elder, give off definite germicidal emanations. These emanations prevent the growth of micro-organisms on Petrie agar plates in the immediate area surrounding the sealed glass tubes containing the colloidal silver chlorid. A 1 per cent. preparation has a germicidal value about equal to pure phenol yet when sealed in the anterior urethra for five hours is without pain, even with much stronger preparations. No irritation is produced when applied to mucous membranes such as bladder, nose, throat, sinuses, etc. Good results followed its application to abscess cavities, fistulous tracts, and also when used as a wet dressing for infected wounds, mastoid incisions, etc. Diluted 4,000 times, a 5 per cent. preparation killed the spirochetes from a foul mouth in four minutes. Given intravenously to rabbits artificially infected with the staphylococcus, 1 c.c. of a 1 per cent. preparation cured the rabbits, sterilizing their blood within twenty-four hours, while controls, untreated, died within forty-eight to seventy-two hours with multiple abscesses of the liver, kidney, heart, and other organs.

Addison's Disease Complicating Pregnancy.—To eleven cases recorded in the literature Fitz-Patrick adds one case. The Pirquet and tuberculosis complement fixation tests were negative.

Treatment of Chronic Bone Abscess.—In cases of chronic bone abscess in which clinical signs—daily mild elevation of temperature, slowly increasing pain and tenderness—indicate that the pus is not sterile but that the virulence of the organisms is slight, Brickner suggests that simple evacuation through a small opening is well worth a trial, provided the patient is under close observation. It must be remembered that, although the bone opening is relatively small, drainage is provided.

Tennessee State Medical Association Journal, Nashville

June, 1922, **15**, No. 2

Lateral Sinus Thrombosis Complicating Mastoditis. W. G. Kennon, Nashville.—p. 87.
Management of Infectious Diarrhea. O. H. Wilson, Nashville.—p. 93.
Synergistic Analgesia. F. Smythe, Memphis.—p. 97.
Granuloma Inguinale. P. G. Morrissey, Nashville.—p. 105.
Dignity and Value of Organized Medicine. T. R. Ray, Shelbyville.—p. 107.
Principles of Endocrinology. L. E. Bisch, Asheville, N. C.—p. 110.

Texas State Journal of Medicine, Ft. Worth

June, 1922, **18**, No. 2

Plea for Establishment of State Psychopathic Hospital. T. J. Bennett, Austin.—p. 73.
What Every Doctor Should Know About Cancer. J. C. Bloodgood, Baltimore.—p. 77.
Medical Side of Cancer Problem. A. C. Scott, Temple.—p. 81.
Divine Antitoxin. T. V. Neal, El Paso.—p. 84.

Virginia Medical Monthly, Richmond

June, 1922, **49**, No. 3

Work of State Board of Health. E. G. Williams, Richmond, Va.—p. 113.
Syphilis of Inner Ear and Eighth Nerve. G. W. Mackenzie, Philadelphia.—p. 120.
Roentgen Ray in Dermatology. C. A. Simpson, Washington, D. C.—p. 122.
Appendicitis. S. McGuire, Richmond, Va.—p. 125.
Nature and Treatment of Hemorrhagic Fever. C. Thompson, Jacksonville, N. C.—p. 127.
Transuterine Pneumoperitoneum. J. J. Mundell, Washington, D. C.—p. 130.
Digitalis in Treatment of Cardiac Decompensation. L. E. Stubbs, Newport News, Va.—p. 132.
Trend of Healing Art. A. B. Greiner, Rural Retreat, Va.—p. 135.
Management of Normal Labor and Puerperium. A. M. Showalter, Cambria, Va.—p. 136.
Pericarditis with Effusion. W. B. Porter, Roanoke, Va.—p. 140.
Sarcoma of Long Bones. J. W. Gibbon, Charlotte, N. C.—p. 142.
Advantages and Methods of Making Labor Easy. I. Procter, Raleigh, N. C.—p. 147.
Submerged Tonsil. D. L. Rawls, Suffolk, Va.—p. 150.
Sinusitis; Report of Case. N. J. Gould, Norfolk, Va.—p. 151.
Venereal Diseases from Army Standpoint. M. C. Sycle, Richmond, Va.—p. 155.
Acute Appendicitis—Acute Salpingitis—Acute Pyelitis Differential Diagnosis. F. D. Worthington, Charlotte, N. C.—p. 158.
Relation of General Practitioner to Venereal Diseases. J. A. Keiger, Greensboro, N. C.—p. 160.
Hydrops Dyspnea Not Relieved by Aspiration: Report of Case. A. G. Brown, Jr., Richmond, Va.—p. 161.

July, 1922, **49**, No. 4

*Primary Carcinoma of Gallbladder. S. H. Waits, University.—p. 175.
Surgical Treatment of Facial Paralysis. C. C. Coleman, Richmond.—p. 180.
Protein Sensitization in Bronchial Asthma, Hay-Fever, and Allied Conditions. With Report of Author's Own Case. G. T. Brown, Washington, D. C.—p. 188.
Pneumonia Etiology and Diagnosis. P. Davis, Roanoke.—p. 193.
Symptomatology and Treatment of Pneumonia. G. B. Lawson, Roanoke.—p. 195.
Some Phases in Treatment of Pneumonia. G. G. Howery, East Radford.—p. 199.
*Hernia of Liver and Intestines in New-Born. E. L. Caudill, Narrows.—p. 201.
Submucous Ulcer of Bladder. Report of Cases Treated by Excision. T. J. Hughes, Roanoke.—p. 202.
Treatment of Diphtheria. T. K. McKee, Saltville.—p. 203.
Technic in Mixing and Administering Arsphenamin. J. J. Giesen, Radford.—p. 206.
Empyema of Maxillary Sinuses, Secondary to Extraction of Teeth. A. Hooks, Bristol, Va.—Tenn.—p. 211.
Tonsillary Hemorrhage. L. L. Jones, Portsmouth.—p. 214.
Cesarean Section: Its Indications and Limitations. R. P. Kelly, Lynchburg.—p. 215.
Program for Malaria Control in Virginia. R. K. Flannagan, Richmond.—p. 219.
Tumors of Mammary Gland. N. D. Bitting, Durham, N. C.—p. 222.

Primary Carcinoma of Gallbladder.—Among 525 operations performed for various affections of the gallbladder and biliary passages there were twenty cases of primary cancer of the gallbladder, a percentage of 3.8. The association of gallstones with primary carcinoma of the gallbladder is very striking. In the twenty cases diagnosed primary carcinoma at operation, stones were demonstrated in ten cases, 50 per cent., but in many of these cases the gallbladder was so involved in growth that stones could not be demonstrated, even though present. Investigations of others seem to show that gallstones are associated with primary cancer of the gallbladder in from 70 to 95 per cent. of cases.

Hernia of Liver and Intestine.—Caudil relates two cases. In one the greater part of the small intestine, the cecum, appendix, ascending and transverse colon, had escaped through an opening at the umbilicus, apparently no larger than a twenty-five cent piece. The umbilical cord had been completely divided to the point of litgation. The extrusion occurred while the mother was in the third stage of labor. In the second case, the baby was well developed and normal at birth with the exception of a large hernial protrusion from the umbilical region. The mass was the size of a large orange and very hard and extended from the umbilicus to the

ensiform cartilage, the umbilical cord coming off from the lower portion of the mass. The hernia was covered with a thin glistening membrane. The anterior abdominal walls were well developed, the hernial mass being very much constricted at point of emergence from the abdominal cavity. The hernia contained nothing but the liver which was apparently very much enlarged.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

April-June, 1922, **19**, Nos. 220-222

Severe Blood Diseases of Childhood. F. J. Poynton, H. Thursfield and D. Paterson.—p. 57.
Causation of Postural or Orthostatic Albuminuria. F. P. Weber.—p. 81.
*Case of Aneurysm of Ductus Arteriosus. R. Hutchison.—p. 85.
Purpura Fulminans Following Measles. E. H. Kelly.—p. 86.

Aneurysm of Ductus Arteriosus.—A girl, aged 6 years, died from a sudden and profuse hemoptysis. There was a history of measles followed by diphtheria five months previously, and six weeks later she suffered from "pleurisy" and had not been well since. On admission she was complaining of pain in the left side of the chest with cough and feverishness. There was a soft systolic murmur at the apex and over the sternum. Examination of the lungs showed some dulness in the left infraclavicular and suprascapular regions with diminution of the breath sounds and some crepitation over the right apex in front. As the case progressed, the dulness at the left apex became more pronounced and the apex beat extended further to the left. The short systolic murmur disappeared. The temperature remained moderately elevated (from 100 to 101 F.) throughout. The necropsy disclosed a rupture of an aneurysm of the ductus arteriosus into the lung.

British Medical Journal, London

June 24, 1922, **1**, No. 3208

*Duodenal Tube in Diagnosis and Treatment of Biliary Diseases. J. Meakins.—p. 983.
Spread, Probable Mode of Infection, and Prophylaxis of Leprosy. L. Rogers.—p. 987.
*Acute Inflammation of Large Diverticulum of Jejunum with Perforation. G. W. Christie.—p. 990.
Temporosphenoidal Abscess. J. Adam.—p. 991.
Carbonic Oxid in Tobacco Smoke. H. E. Armstrong.—p. 992.
*Amebicidal Action of Conessine. H. C. Brown.—p. 993.
*Modification of Operation of Cholecystenterostomy. A. Fullerton.—p. 995.
Erythema Nodosum Associated with Acute Rheumatism. H. Wetherbee.—p. 995.
Recurrent Vesicular Eruption After Influenza. A. W. Panton.—p. 995.
Cancer of Tongue: Excision of Tongue: Cancer of Stomach 34 Years Later. J. S. Manson.—p. 996.

Duodenal Tube in Diagnosis and Treatment of Biliary Disease.—Apart from its value as a diagnostic measure, Meakins asserts that the use of the duodenal tube lends itself to treatment. In cases of biliary stasis independent of complete obstruction it is advisable to promote free and periodical emptying of the gallbladder and passages. This is of particular importance when the stasis is associated with some chronic inflammatory process. If cholelithiasis is present, and there is good reason to avoid an operation, if possible, much in the way of amelioration may be expected. This hope is especially warranted when it is realized that in practically every case of cholelithiasis, a chronic infection of the biliary passages is present, which infection perpetuates and is perpetuated by biliary stasis in the manner of a vicious circle. Several cases in point are cited.

Acute Jejunal Diverticulitis.—Christie's patient complained of acute pain in the left side of the abdomen, below the umbilicus. At the site of the pain there was distinct tenderness on palpation and a suspicion of slight rigidity. On deep inspiration a round mass could be felt somewhat larger than a tennis ball, about midway between the umbilicus and the symphysis pubis, just to the left of the middle line. The lump was hard and of the consistence of a uterine fibroid, though it was extremely tender. Vaginal examination did not offer any assistance in diagnosis, and per rectum no fullness could be felt through the pouch of Douglas. The swelling was not particularly mobile, though it was circumscribed. Operation was performed fourteen days after the onset of the acute phase of her illness. On opening the peritoneum, a quantity of serous peritoneal fluid escaped. About the center of the abdomen, to the left of the middle line, was a mass somewhat larger than a tennis ball and entirely covered with a thick layer of omentum. When the swelling was denuded of its omentum, there was exposed a large spherical mass, tense and fluctuating, about the size of an apple, springing from the antimesenteric border of a loop of small intestine. A large gangrenous patch was disclosed on the fundus of the swelling, with a perforation in its center through which very foul smelling pus and semisolid contents escaped. It was obvious that this was a condition analogous to acute inflammation of a Meckel's diverticulum, which had perforated soon after the commencement of her illness but which had fortunately been successfully dealt with by the omentum. The origin of the diverticulum from the jejunum about 9 inches below the duodenojejunal junction was established.

Amebicidal Action of Conessine.—Conessine, an alkaloid having the formula $C_{12}H_{20}N$, which has been isolated from several members of the family of *Apocynaceae*, is shown by Brown to exert a very strong inhibitory action on the growth of free living amebas; in fact, exactly equal to that of emetin. Infusions of the seeds of these plants have for many years been used in India with marked success in the treatment of chronic dysentery. Although when administered subcutaneously conessine produces an area of necrosis at the site of inoculation, it can be administered by the mouth or intravenously in suitable doses without producing symptoms. It is approximately 50 per cent. less toxic than emetin. A diminution of the inhibitory action on free living amebas of solutions of emetin and conessine which have been in contact with intestinal mucus is shown. The serum of patients receiving full and repeated doses of emetin has apparently no amebicidal action; hence it is unlikely that the presence of conessine in blood serum could be detected by its effect on amebae. The drug was used in the form of the sulphate. The subcutaneous M. L. D. of conessine for a mouse is approximately 3 mg., and of emetin 2 mg. The intravenous M. L. D. is 0.45 mg. and 0.3 mg., respectively, or, in other words, as far as these observations go emetin is approximately 50 per cent. more toxic than conessine.

Modified Cholecystenterostomy.—The following procedure is advocated by Fullerton: The gallbladder is opened and cleared of its contents. A light clamp is placed near the neck, and the greater part of the viscus is removed. The small remaining portion is anastomosed to the duodenum, so that when the operation is completed the cystic duct opens into the duodenum without the intervention of any sac which might harbor gallstones or regurgitated intestinal contents. Just enough of the gallbladder is left to enable the anastomosis to be accomplished satisfactorily.

Glasgow Medical Journal

June, 1922, **15**, No. 6

What Is Heterophoria? A. J. Ballantyne.—p. 321.
Fundamental Points in the Diagnosis of Pulmonary Tuberculosis. J. Crocket.—p. 329.
*Tay-Sachs' Disease: Symptomatology and Pathology of Three Atypical Cases. H. W. Torrence.—p. 341.

Tay-Sachs Disease.—The cases described by Torrance, being the youngest in the list, most closely resemble the infantile Tay-Sachs group, with regard to the age incidence. Histologically, they also resemble it, but possessing the typical pathologic picture of degeneration of optic nerves, nerve fiber layer, and ganglion cells (a triple syndrome). They present fewer additional variations to the accepted triple syndrome than the other cases. Of these additional irregularities, most certainly the degeneration of rods and cones may be discounted, owing to postmortem change and method of fixation. In the elder cases (i. e., Ichikawa and Wandless) the retinal destruction is most complete. This may be due to the patients having lived longer than in the infantile group, and so allowing the final stages of degeneration to take place.

Indian Journal of Medical Research, Calcutta

April, 1922, **9**, No. 4

Indian Calliphorinae. **VI. How to Recognize Indian Myiasis-Producing Flies and Their Larvae, Together with Some Notes on How to Breed Them and Study Their Habits.** W. S. Patton.—p. 635.
Id. VII. Additional Cases of Myiasis Caused by Larvae of Chrysomyia Bezziana Vill., Together with Some Notes on Diptera which Cause Myiasis in Man and Animals. W. S. Patton.—p. 654.
Indian Aphiochaetae. Aphiochaeta Xanthina Speiser. (Repicta Schmitz; Circumsetosa de Meijere; Ferruginea Brunetti), Whose Larvae Cause Cutaneous and Intestinal Myiasis in Man and Animals, and Aphiochaeta Rufipes Meigen, Whose Larvae Occasionally Cause Cutaneous Myiasis in Animals. W. S. Patton.—p. 683.
Bacteriologic and Laboratory Technic. V. W. F. Harvey.—p. 692.
Virulence of Micro-Organism and Its Dependence on Culture Medium. W. F. Harvey and K. R. K. Iyengar.—p. 726.
Virulence of Organism as Factor in Efficacy of Prophylactic Vaccines. W. F. Harvey and K. R. K. Iyengar.—p. 730.
Immunizing Properties of Allied Organisms and Nonspecific Organisms. W. F. Harvey and K. R. K. Iyengar.—p. 736.
Immunization or Response of Immunized Animals to Small Dose of Antigen Administered at Long Interval After First Immunization. W. F. Harvey.—p. 740.
Relapsing Fever in Punjab (Preliminary Report). C. A. Gill.—p. 747.
*Visceral Infections Due to Higher Fungi. F. P. Mackie.—p. 781.
*Correlation Between Chemical Composition of Anthelmintics and Their Therapeutic Value in Connection with Hookworm Inquiry in Madras Presidency. J. F. Caius and K. S. Mhaskar.—p. 787.
*Delayed Cures in Treatment of Hookworm Infection. K. S. Mhaskar.—p. 799.
Demonstration of Capsules of Pneumococcus by Modification of Benian's Relief Stain. R. H. Malone.—p. 804.
Septic Tank Latrines in Relation to Hookworm Disease. J. B. McVail.—p. 806.
Cultural Phases of Leishmania Donovani. B. Mohan das Gupta.—p. 809.
Position of Genus Hemocystidium (Castellani and Willey, 1904); Description of Two New Species. H. E. Shortt.—p. 814.
Two Hemogregarines of Persian Lizards. H. E. Shortt.—p. 827.
*New Serum Test for Kala-Azar. L. E. Napier.—p. 830.
Formalin Test as Applied to Diagnosis of Kala-Azar. P. S. Mills.—p. 847.
*Gaté-Papacostas Reaction in Leprosy. D. A. Turkhud and C. R. Avari.—p. 850.
Examination Into Degree of Efficacy of Antirabic Treatment. W. F. Harvey and H. W. Acton.—p. 852.

Visceral Infections by Fungi.—The following cases are cited by Mackie: one case of pulmonary aspergillosis complicating kala-azar; and two cases of streptothrix infection of the brain.

Chemistry and Therapeutic Value of Anthelmintics.—According to Caius and Mhaskar, salicylic acid has no anthelmintic properties, but esterification with methyl alcohol results in the formation of a compound with well marked vermicidal properties Esterification of either thymol or betanaphthol results in the loss of the vermicidal and vermifugal properties of those two very potent anthelmintics.

Delayed Cures in Hookworm Infestation.—In addition to its immediate vermicidal action, Mhaskar says, an anthelmintic may also have a remote action on the worms. This remote action brings about "delayed cures." Except in proved cases of reinfection, a treatment which is known to be efficient need not be followed by any other.

New Serum Test for Kala-Azar.—The technic of the test described by Napier is similar to that described by Gaté and Papacosta as the formol-gel test for syphilis, but the specificity of the test is in no way dependent on the gel formation but on the accompanying formation of a white opacity. Napier terms this the "aldehyde test." About 5 c.c. of blood is withdrawn from the patient's arm and allowed to stand for a sufficient time for the serum to separate. One c.c. of clear serum is then placed in a small test tube ½ inch in diameter; to this one drop of 30 per cent. liquor formaldehyd in the form of commercial formalin is added, the serum is immediately well shaken and placed in a test tube rack at laboratory temperature. The serum from an untreated case of kala-azar will immediately become viscid; within a minute or two it will have "set," so that the tube can be inverted without the serum being spilled, and will begin to become whitish and opalescent. Within from three to twenty minutes, the time varying with different cases, the whole of the serum will have become absolutely solid and opaque like serum coagulated by heat or the "white" of a hard boiled egg. If the serum is hemoglobin stained the coagulated serum will have a pink tinge which will turn chocolate brown after twenty-four hours.

Formol-Gel Reaction in Leprosy.—One hundred and sixteen serums from cases of leprosy not specially selected—nodular, anesthetic and mixed cases were included indiscriminately—were tested by Turkhud and Avari by the formol-gel method of Gaté and Papacosta. Every case gave a definitely positive reaction. The test was carried out in every instance with inactivated serum only. From these observations it appears that the Gaté-Papacostas reaction is likely to prove a valuable serologic test in the diagnosis of leprosy.

Indian Medical Gazette, Calcutta

June, 1922, **57**, No. 6

India's Debt to Medical Research. J. Cunningham.—p. 201.
Detection of Anthrax Spores in Shaving Brushes. A. D. Stewart.—p. 204.
Malignant Disease of Retained or Imperfectly Descended Testis. F. P. Connor.—p. 205.
*Mass Treatment of Hookworm Infection. K. S. Mhaskar.—p. 208.
Adhesion and Retention of Membranes. W. S. Willmore.—p. 210.
Case of Fibroma Molluscum. D. F. Michael.—p. 219.

Mass Treatment of Hookworm Infection.—Thymol and betanaphthol in a maximum dose of 50 grains mixed with 25 grains of light magnesium carbonate, given without purgatives, according to the apparent age of the person, is recommended by Mhaskar as being a simple, effective and safe treatment.

Lancet, London

July 1, 1922, **2**, No. 5157

Osteo-Arthritis. A. G. T. Fisher.—p. 1.
*Etiology of Rickets in Infant. H. Chick, E. J. Dalyell, M. Hume, H. M. M. Mackay and H. H. Smith.—p. 7.
Roentgen-Ray Diagnosis of Rickets. H. Wimberger.—p. 11.
*Malignant Melanoma of Gum. M. J. Stewart and J. Phillips.—p. 12.
*Agglutinating Serum for Certain Strains of Tubercle Bacilli. J. Smith.—p. 13.
*Diagnosis of Suprarenal Insufficiency. S. Wright.—p. 14.

Etiology of Rickets.—The observations on the etiology of rickets reported on by Chick et al. disclosed that rickets developed during winter and spring under excellent hygienic conditions in infants receiving a diet composed of fresh milk from stall-fed cows and to which sugar was added, and was prevented in the case of children receiving a diet containing cod liver oil, more milk, and less carbohydrate. Both milks were low in vitamin A content. Rickets did not develop in summer on either diet. Rickets can be cured by codliver oil and by exposure to sunlight, or to the radiation of the mercury vapor quartz lamp. The first six months of life is a period of special susceptibility to the onset of the disease. Rickets may develop in an infant whose general condition is good or improving, and healing of the bones may occur independently of improvement in the general condition.

Melanoma of Gum.—Stewart and Phillips relate a case which is interesting as an example of melanoma arising in an unusual situation, the alveolar margin of an edentulous upper jaw. The patient's attention had only been drawn to the part ten days before she sought medical advice, and the denture itself was not roughened. A small projecting spicule of bone was found at operation, growing from the jaw immediately beneath the tumor.

Agglutinating Serum for Tubercle Bacillus.—By injecting into rabbits a nonvirulent strain of living human tubercle bacilli in increasing doses at five day intervals, Smith secured a high titer serum. After the sixth dose, the titer of the serum against the homologous strain was 1:1,600. Of eleven strains of human tubercle bacilli tested against the serum seven reacted to a 1:200 dilution, five to a 1:1,600 dilution.

Diagnosis of Suprarenal Insufficiency.—It is shown by Wright by an investigation of 100 healthy subjects that the white line of Sergent is a phenomenon occurring in a large proportion of normal subjects and is without pathologic significance. A number of analogous physiologic responses are described. The white line is not related to suprarenal insufficiency or to abnormally low systolic or diastolic pressure. The white line is produced by local emptying of the capillaries from the active contraction of some elements in their walls, and is quite independent of the condition of the

arterioles. A nervous mechanism of the nature of an axon reflex may be involved. The bearing of this investigation on the clinical recognition of suprarenal insufficiency is discussed.

Archives de Médecine des Enfants, Paris

June, 1922, **25**, No. 6

*Foreign Bodies in the Duodenum. V. Veau and R. Doubrère.—p. 321.
Case of Lymphogranulomatosis. H. Barbier et al.—p. 338.
Congenital Occlusion of Small Intestine. A. Rendu and P. Wertheimer.—p. 349.
*Acute Articular Rheumatism. P. Gautier.—p. 354.
Crossed Intercostal Zona After Pleurisy. G. Schreiber.—p. 357.
*Familial Hypertrophy of Bones: Pleonosteosis. J. Comby.—p. 360.

Foreign Bodies in the Duodenum.—Veau exposed the duodenum of an 11 months infant who had a safety pin arrested at the spot, the point upward. He did not venture to cut into the duodenum, but merely manipulated it to dislodge the safety pin and squeeze it shut. Attempts to force it along failed. The safety pin was found in the stool the sixty-fifth day after the operation, the eighty-third after it had been swallowed. He summarizes 21 operative cases from the literature, and 10 others in which the foreign body was found in the duodenum at necropsy. The foreign body was a safety pin in only 4 of the cases, and only 8 of the patients were children. In 7 cases the duodenum was incised, with one death. A gastro-enterostomy completed the operation in one case. In the 6 cases with peritonitis already installed, 50 per cent. died. With infants, an incision across the fibers of the rectus gives more material for suturing. Evisceration should be avoided in infants, as this entails shock. The suture threads should be left unusually long, up to twenty-one days. The foreign body was worked back into the stomach in 6 cases, with recovery in 4; in the fifth case the perforation of the duodenum had escaped detection.

Complications of Acute Rheumatism.—The boy of 6 was discharged the fifth week after the onset of acute articular rheumatism, during the course of which there had been endocarditis, pericarditis, pleurisy and chorea. He had been given 3 gm. of sodium salicylate daily for two weeks and then smaller doses for ten days, with digitalis and ice to the head as needed. The only relic left of the whole is a mitral insufficiency.

Familial Disease of Ossification.—The family described here was reported by Léri last year, as summarized in The Journal at the time, Nov. 5, 1921, p. 1526.

Bulletin de l'Académie de Médecine, Paris

June 6, 1922, **87**, No. 23

*Uterine Fibromas. T. Tuffier.—p. 599.
Experimental Anaphylactic Shock by Respiratory Apparatus. F. Arloing and L. Langeron.—p. 604.
Center for Boarding Out of Infants under Medical Supervision. Guinon et al.—p. 607.
*Clamps in Abdominal Surgery. Abadie and Argaud.—p. 612.
*The Soil in Tar Cancers. G. Roussy.—p. 617.
Case of Adams-Stokes Disease. O. Josué.—p. 621.
Mechanism of Acceleration of the Pulse. W. Janowski.—p. 625.

Uterine Fibromas.—Tuffier insists that roentgen castration is contraindicated for women still in the child-bearing age. He argues that enucleation should be given the preference always except when conditions otherwise justify hysterectomy. The one great objection to enucleation has been the danger of recurrence, but now that irradiation can combat any recurrence, this objection is removed.

Clamps in Abdominal Surgery.—Abadie and Argaud used the Mayo and other clamps in their experimental research on dogs, and announce that the crushing—instead of killing the tissue cells, as they expected—seemed to inspire them to more active repair than when the tissues were merely sutured without being clamped. The denuded portions healed over more rapidly. Linen thread tore through sometimes, but chromecized catgut 00 answered all requirements. The Martel technic gave more regular and prompter results than the Mayo.

The Soil in Tar Cancer.—Roussy obtained tar cancers in 38 per cent. of sixty adult mice by the end of 240 days. Benign tumors had developed in 26 per cent., and 23 per cent. had shown no signs of a tumor. In nineteen of the sixty mice multiple tumors developed, malignant in fourteen. The difference in the outcome must be ascribed to the soil.

Journal d'Urologie, Paris

May, 1922, **13**, No. 5

*Genito-Urinary Reflex Phenomena. J. M. Bartrina (Barcelona).—p. 337.
*Renorenal Reflexes. Lanzilotta.—p. 343.
*Hematuria with Hydronephrosis. Z. Mitsinkidès.—p. 349.
*Cystoscopy with Chyluria. Hartmann-Keppel (Suez Canal).—p. 359.
Another Case of Syphilis of the Bladder. A. Cosacesco.—p. 365.
Danger of Ordering a "Twenty-Thousandth Solution" or the Like. J. Janet.—p. 367.

Reflex Phenomena of the Genito-Urinary Apparatus.—Bartrina reported last year a case in which the abnormal position of one kidney checked the functioning of both kidneys, and the menacing uremia was cured only by removal of the malplaced kidney. But the other kidney is not the only organ that suffers from an inhibiting reflex starting in the urinary apparatus. The genital and the digestive apparatus may feel the effect, as also the other elements in the urinary system. Among these reflexes, pain or tenesmus in the bladder early in renal tuberculosis is exceptionally instructive. Disturbances in the urethra and prostate are common with calculi in kidney or ureter. This "false urethritis" with unsuspected calculi in the kidney often proves misleading. There is pain or smarting in the urethra, and there may be secretion, but the gonococcus is not found. The ordinary bacterial flora may then set up inflammation, or the local treatment applied on a mistaken diagnosis may start it.

The neuralgia character of the pain stamps these reflex cases as a group apart. They persist refractory to treatment until the calculus ceases to give further trouble. Pain in kidney or urethra may be noted in gout, diabetes, phosphaturia, etc., probably from some old damage of the kidney with which it still has to contend. The kidney often suffers in the uric acid, oxalic acid and other diatheses. There may be no symptoms in the kidney itself, but its intimate nervous connection with the genital apparatus may readily explain certain instances of impotency, spermatorrhea, and other functional disturbances, as of reflex origin. Intestinal disturbances traceable to reflex action from unsuspected kidney stones range from simple constipation to pseudo-occlusion and spasmodic pains. One of his patients with known kidney calculi sometimes had to take enemas a dozen times a day to relieve his returning colic. Another barely escaped a laparotomy for ileus by the discovery of a few erythrocytes in his urine. In all these bowel cases, the complete cure followed the clearing out of the calculi from the kidney. Pain spreading from the bowel to the rectum and anus is particularly suggestive of a kidney calculus. Injection by the rectum of an anodyne relieves the pain with true kidney colic better than by ingestion or hypodermic.

Renorenal Reflex.—Lanzilotta reports five cases in which the pains from a diseased kidney were localized exclusively in the other kidney which was sound. After removal of the calculi or of the whole kidney, there was no further pain on the other side.

Profuse Hematuria with Hydronephrosis.—Five cases are described. They had mostly been mistaken for cancer, but recovery followed nephrectomy.

Cystoscopy in Chyluria.—The cystoscope revealed that the chyluria was not as independent as assumed. In the three cases described, treatment with hexamethylenamin and uva ursi was followed by an exceptionally rapid cure.

Médecine, Paris

June, 1922, **3**, No. 9

*Progress in Electroradiology and Physiotherapy. A. Zimmern.—p. 645.
*Static Electricity in Treatment of Knee. E. J. Hirtz.—p. 660.
Radiotherapy in Cancer of Uterine Cervix. R. Ledoux-Lebard.—p. 666.
Operating for Calculus Under Roentgen Control. F. Arcelin.—p. 668.
Recent Progress in Locating Gallstones. H. Béclère.—p. 672.
Relations Between Doctor, Radiologist and Patient. Lehmann.—p. 678.
*Electric Accidents. A. Zimmern.—p. 684.
*Electricity in Treatment of Urethra Disease. Heitz-Boyer.—p. 690.

*The Galvanopsychic Reflex. J. M. Lahy.—p. 696.
Indications for Mineral Waters in Chronic Rheumatism. A. Florand.—p. 702.
Manual Treatment of Functional Spasms. L. Durey.—p. 709.
The Doses in Radium Treatment. R. Weill.—p. 714.
Electrotherapeutics in Constipation. A. Berthomier.—p. 719.

Radiotherapy.—Zimmern exclaims that every day is recording new progress in technic, in diagnosis, in therapeutic application of radiant energy, so that radiology is establishing more and more its position as one of the strongest pillars of the medical sciences. The deep roentgen-ray treatment is nothing new, he says, but the logical development of our knowledge of the properties and biologic action of the roentgen rays. In pruritus and radicular neuralgia, roentgenization of the roots involved, where they emerge from the spine, has cured in a number of rebellious cases, as also in radiculitis of the sciatica or lumbago type. With deep roentgen therapy, there seems to be an optimal dose for each kind of affection, but this may vary with the individuals in each class. In diagnosis, Sicard obtained instructive findings by injecting an opaque iodin compound into the epidural space or spinal canal, as it worked its way into the sacral culdesac. For pyelography, a 30 per cent. solution of sodium bromid has been found efficient, while it has the advantage of being nontoxic.

Hydrarthrosis of the Knee.—Hirtz relates that a prompt cure was effected by roentgen exposures plus static electricity in all but one of twenty-four cases of acute or chronic hydrarthrosis, and great improvement was realized even in this one case. A tuberculous element is probably responsible for the partial failure in this patient. The list includes several cases of gonococcus origin.

Prophylaxis of Electric Accidents.—Zimmern urges that children in school should be systematically taught the danger of placing the hand on a gas or water faucet when an electric wire is held in the other hand.

Electricity in Treatment of the Urethra.—Heitz-Boyer recapitulates the many uses for static electricity, diathermia, spark treatment, *étincelage*, in acute and subacute affections of the urethra, and in sclerosis by *étincelage* or electrolysis, and in destroying polyps and other mild tumors. In short, he adds, there is scarcely any lesion in the urethra that is not amenable to some form of electric treatment.

The Galvanopsychic Reflex.—Lahy discusses the differences in the galvanometer readings when connected with a human body and generator. The resistance of the body to the electric current varies even with mere emotions, and this galvanopsychic reflex is thus one of the most sensitive means at our disposal for investigating emotion. It is significant that the response is most pronounced when the electrodes are placed on a region where sweat glands most abound.

Revue de Chirurgie, Paris

1922, **60**, No. 1

*Burns and Their Treatment. A. Kotzareff.—p. 5.
Angles of the Colon in the Fetus and the Newly Born. P. Descomps and R. Ducastaing.—p. 30.
*Dead Bone Implants. C. Girode.—p. 60.

Burns and Their Treatment.—Kotzareff recalls that animals die from burns just the same whether the nerves innervating the region have been severed or not. They succumb to poisons generated in the burned tissues unless they can manufacture antibodies or have them supplied from without promptly enough to annul the toxic action. Serum from a guinea-pig that had been burned, and had produced antibodies, when injected into another guinea-pig, protected it against fatal harm from a burn experimentally induced afterward, even when more than half of the body was gradually subjected to a burn of the third degree. Fourteen series of experiences in this line are reported, with other data, which all demonstrated, he says, that serotherapy is capable of warding off the toxic action from a burn, the toxemic shock, which is the main factor in the fatal outcome of burns. He urges the systematic production and use of an antiburn serum. It can be obtained from patients convalescing from burns or can be prepared from animals. Two clinical cases are described in which the recovery of the boys of 8 and 5½ is ascribed to the intramuscular injection of 5 or 8 c.c. of serum from other children convalescing from burns. The reaction to a severe burn is manifest in fifteen minutes by the eosinophilia in the lungs. This is not special to burns, being found in all endogenous and exogenous intoxication from destruction of animal tissues. This destruction, however, entails an immunizing process in time, and this we can hasten by injecting an antiburn serum. The question now is merely the production of an antiburn serum so it can be readily available at all times.

Disadvantages of Dead Bone Implants.—Girode writes from Delbet's surgical service to describe the experience with a dead bone implant in treatment of fifteen cases of pseudarthrosis or fracture of the neck of the femur. The bone was taken from the tibia or the ulna of just slaughtered cattle, and was kept in alcohol. The results were extremely unsatisfactory, for a number of reasons. Delbet has returned to his former method of taking a strip from the patient's own fibula for the purpose, without periosteum.

1922, **60**, No. 3

*Recurring Inguinal Hernia. Oudard and G. Jean.—p. 143.
*Mixed Tumors in the Parotid Region. E. Forgue and G. Roux.—p. 181.

Recurring Inguinal Hernia.—Oudard and Jean tabulate from the navy surgical records 145 out of a total of 183 cases of known recurrence of inguinal hernia after operative treatment. The recurrence was external oblique in 131 instances, direct in 13, and internal oblique in only one case. No method of treatment was exempt from recurrence, even when done under the most favorable auspices. These experiences teach the necessity for supporting the wall after the primary herniotomy if the tissues are exceptionally flabby; not with a pad, merely an elastic band. The sac should always be amply opened up to see that there is no adhesion, and any epiploic fringe should be resected. The percentage of recurrence with the various methods of operating ranged from 1 to 10 per cent. The number of recurrences with the Bassini operation have convinced them that this method should be definitively abandoned. The Championnière method is as good as the most complicated for ordinary hernias of the congenital type, with a long narrow canal. With hernia of other types, they commend a modification of Halsted's first method.

Mixed Tumors of the Parotid.—Forgue and Roux review twenty-two cases.

Archivio Italiano di Chirurgia, Bologna

May, 1922, **5**, No. 3

*Pseudocyst in the Radius. L. Baccarini.—p. 233.
Accessory Interrenal Body Removed at Herniotomy. U. Stoppato.—p. 253.
*Chronic Primary Pancreatitis. D. Calzavara.—p. 265.
*Limits of Prostate Operability. G. Roello.—p. 289.
*Tuberculous Peritonitis. C. Decio.—p. 311.

Pseudocyst in the Radius.—The head of the radius was resected in the boy of 6, and the findings suggest that some injury of the vessels had allowed the escape of blood into the bone, these repeated small hemorrhages prying apart the lamellae. They drop into the marrow cavity and are absorbed. This sequence may occur from trauma; but more often it is the result of some toxic or developmental anomaly of the artery wall. This explains best the gradual regular increase in the size of the cystic cavity. Scraping out the cyst removes the altered bone tissue and the abnormal vessels and leaves a clean cavity, and there is a chance it will fill up with normal compact bone. These pseudocysts appear during the period of most active growth of the long bones, and in the region of the bone close to the epiphysis, where the growth process is most active. The lesion is usually single and is cured by simple curetting, if the safeguarding of the region can be counted on during the months of the repair process.

Chronic Pancreatitis.—Calzavara relates that the woman of 31, after a hearty meal, experienced a sudden intense pain in the epigastric region which did not spread. The pain ceased suddenly and spontaneously in two hours, but it

returned again for seven days, either from two to four hours after eating, or during fasting. There was no vomiting, fever or jaundice. There was a free interval for three years, and then the pains returned as before, recurring during two weeks. A year later they reappeared for three and later for seven days, the interval finally becoming only one month. At the last attack there was vomiting and a slight tendency to jaundice. An operation showed a chronic, evidently primary, circumscribed interstitial inflammatory process in the head of the pancreas. He did not attempt resection, and merely provided an ample outlet for the bile by suturing the fundus of the gallbladder to the anterior wall of the stomach in the prepyloric region. There has been no return of the disturbances during the more than a year since and the general health has been perfect. The case confirms that a primary pancreas disease may simulate gallstone colic. The lack of spreading of the pains helps to differentiate the pancreatitis. There were foci of fat necrosis in the omentum in this case, with atrophy of the adipose tissue with polyblastic infiltration.

The Limits of Operability with Prostate Disease.—Roello analyzes 520 operative cases of hypertrophied prostate in Lasio's service since 1909. With the Freyer operation, 469 were cured and fifty-one died, but the mortality has been constantly declining, from over 14 in 1909 to 4.55 per cent. in 1921. There are no contraindications to the Freyer operation, he says, except grave valvular or heart disease with lost compensation, or tabes or myelitis interfering with the innervation of the bladder, or extreme wasting disease or acute infectious disease. Under all other conditions the operation at one or two sittings has every prospect of success.

Surgical Treatment of Tuberculous Peritonitis.—Decio relates that 19 are still living of the 31 operative cases he describes in detail. The outlook seems to be promising for a combination of radiotherapy or heliotherapy with operative measures. In over two thirds of the cases the peritoneal tuberculosis subsides after the laparotomy, especially the serous form of tuberculous peritonitis. Of course, the patient may succumb to tuberculous lesions elsewhere, after clinically normal conditions have been restored in the peritoneum. He analyzes recent literature on the subject. The 31 cases cited are the only ones he has been able to trace of the 50 operative cases during the last ten years in Ferroni's service at Florence. The patients were all women between 22 and 55 except 2 girls of 15. The age seemed immaterial for the results, as also whether a drainage tube was left or not. In his latest series he closed the abdomen completely after the exposure of the peritoneum to the light and air during the laparotomy. He compares the various theories that have been advanced to explain the action of the simple laparotomy, inclining to ascribe the effect to the "modification of the humors" by the operation.

Riforma Medica, Naples

May 22, 1922, **38**, No. 21

*Indol in Pulmonary Disease. O. Cantelli.—p. 481.
*Evils of Taxis for Hernia. R. Botteselle.—p. 483.
*Hydatid Cyst of Liver. O. Cignozzi.—p. 485.
Primary Soft Chancres on Tongue. G. Martini.—p. 490.
Preventive Treatment of Neurosyphilis. G. Pellacani.—p. 491.
Lumbago and Sciatica. E. Aievoli.—p. 493.

Formation of Indol in Destructive Pulmonary Lesions.—Cantelli's research on rabbits in 1915 confirmed that indol was excreted through the skin after injection of indol. His research here reported on patients with pulmonary lesions apparently establishes that indol in the breath and in the sputum is a sign of a suppurating and destructive lesion in the lung. It was never found with pulmonary or bronchial lesions not accompanied by suppuration, and it seems to be responsible for the fecaloid odor in the destructive process. Indol in the urine warns of a suppurating and putrefying process somewhere in the body.

Evils of Taxis of Hernia.—In the case reported, the strangulated hernia was reduced by taxis without the strangulation being corrected or even suspected. This is the great danger of taxis except as a preliminary when all is prepared for an operation. In this case the man was a deafmute, and the symptoms of ileus were all that was known of the circumstances.

Operative Treatment of Echinococcus Infection of the Liver.—Cignozzi reports 2 deaths and 3 cases of recurrence in his 50 operative cases of hydatid cysts in the liver and 8 in the lungs. In 4 other pulmonary cases, no operation was attempted. This experience has demonstrated the advantages of suturing the cyst to the abdominal incision, with capillary drainage. The extensive defect left can be readily corrected with a plastic operation. In one case in which the hepatostomy opening is illustrated, the cyst measured 16 cm. in depth. Notwithstanding this large size, the cyst was easily reached through a pararectal incision and marsupialized. The cyst cavity is packed with dry gauze for ten days and then with gauze dipped in an acid alcohol solution. The cyst membrane shrivels and is cast off spontaneously in from eighteen to twenty days. The temperature usually runs up after the fifth or six day, from resorption, but returns to normal after the membrane has been cast off. The gauze aids in stimulating granulation so that the healing is complete in from seven to eighteen weeks. A plastic operation to close a large defect has been applied in 140 cases, and always with most satisfactory outcome. The fluctuation is rendered evident as the patient lies on his side on the table or bed, without a pillow, and the physician places his right fingers on the lower part of the liver region while with the other hand he depresses the wall, 4 or 5 cm. above, telling the patient not to breathe. By this means a wave of fluid can be dashed back from hand to hand, a constant and pathognomonic sign of the cyst below. The cyst tends to spread forward wherever its origin. Eosinophilia is found in 60 or 80 per cent. of the cases, and the intradermal reaction in 90 per cent. but the fixation of complement test is positive in about 93 per cent. The urine sometimes contains albumin and tube-casts.

May 29, 1922, **38**, No. 22

The Serum Proteins in Pulmonary Tuberculosis. F. Durand.—p. 505.
Histology of Experimental Benzol Poisoning. G. Brandino.—p. 506.
Stovain Spinal Anesthesia. I. di Pace.—p. 508.
Stab Wound of the Mesentery. F. de Gironcoli.—p. 510.

June 5, 1922, **38**, No. 23

*Early Diagnosis of Apical Disease. I. Jacono.—p. 529.
*Surgical Treatment of Tabetic Gastric Crises. D. Giordano.—p. 530.
*Epigastric Pain with Hemoptysis. C. Cantieri.—p. 531.
*Spastic and Plethoric High Blood Pressure. C. Trunecek.—p. 534.
*Inheritance of Disease. P. Mino.—p. 535.

Early Diagnosis of Apical Disease.—Jacono adds palpation through the axilla to Boeri's four signs of incipient apical disease; namely, the auscultation findings after massage of the apex; tenderness of the chest wall in the apex region; defective or excessive development of the muscles in the region, and the pupil phenomena. Jacono pinches the muscles through the intercostal spaces, in and below the axilla, on both sides. In health this gentle pinching is scarcely noticed but, with apical disease below, it causes lively pain. If the glands feel large and tender, this is further evidence of a lesion in the apex. These changes might be explained by toxic neuritis, reflex neurotrophic disturbance, or involvement of the pleura.

Surgical Treatment of Tabetic Gastric Crises.—In Giordano's patient the gastric crises were essentially motor disturbances, and he severed the vagus at the diaphragm, supplementing this with gastro-enterostomy and dilaceration of the sympathetic fibers accompanying the celiac trunk nerve. The young woman had been confined to bed for a year, the gastric attacks returning every two or three weeks, and lasting from three to ten days. The rebellious vomiting had sapped all her strength. After a two months' interval, the vomiting attacks returned, but the food was passed on and retained, and the attacks could be arrested with chloral. Of late they have been growing less severe and less frequent, but pains in the legs have been growing more severe.

Epigastric Pain with Hemoptysis.—Cantieri warns that this combination of blood issuing from the mouth and pain in the epigastrium is liable to be mistaken for a bleeding ulcer in

the stomach or duodenum. In one young woman, intermittent epigastric pain, tenderness, dyspepsia, and blood issuing from the mouth accompanied the menstrual periods. Finally râles and blood streaked sputum corrected the diagnosis. In another case the epigastralgia and dyspepsia were not accompanied by any signs of tuberculosis, but the conditions under which the hemorrhage appeared testified to its hemoptysis nature, corroborated by the ultimate fatal course of the case. The epigastralgia disappeared after a few months. The solar plexus evidently suffers from the tuberculous toxins and decalcification. This plexus is also liable to be compressed by tuberculous suprarenals. In another case, the patient was sometimes waked in the night by blood in her mouth and a tickling in the throat; occasionally this occurred in the daytime. An apical affection had been diagnosed, but the persisting good general condition during the year finally led to search elsewhere, and a varicose vein was found in the throat. The young woman was hysteric, and had varicose veins on the legs and varices in the vagina. When the temperature rises and keeps high after the hemorrhage, this tips the scale in favor of a tuberculous process. The lack of physical symptoms should not mislead the physician. Blood in the stools is no criterion, as blood from the lungs may be swallowed. Radiography may give the clue when all else fails. The gastric pain in these hemoptysis cases may deceptively simulate the classic pain with gastric ulcer. He warns against the unconscious tendency of the patient and family in such cases to mislead the physician away from the idea of the more serious lung disease, by emphasizing the gastric ulcer features of the case.

High Blood Pressure.—Trunecek discusses the type in which the high blood pressure is the result of spastic contraction of certain parts of the blood vessels, and the type for which a plethora of blood is responsible. In both these forms, food that leaves toxic waste should be avoided, and hygiene in general enforced. If this does not cure, then the acids in the blood should be neutralized with a harmless alkaline solution. For this he commends the fluid known as Trunecek's serum. It is a combination of all the alkalines normally in the blood serum, and in the same proportions. From five to ten injections, each of 2 or 5 c.c. of this, repeated twice a week are generally successful. In older persons with long chronic high pressure of these types, the course must be longer. In prophylaxis, a course of chlorid and bicarbonate mineral waters, once or twice a year for two or three weeks, and iodids to promote oxidations may be useful, with Trunecek serum at need.

The Mendelian Laws in Inheritance of Disease.—Mino remarks that at present all that can be done is to accumulate data in this line, for the deductions of a following generation. But the individual must compile the data with criteria and methods which will render their utilization possible.

Crónica Médica, Lima, Peru

April, 1922, **39**, No. 706

*Biosociologic Progress in the Americas. R. J. Fosalba.—p. 111.
Stenosis of Larynx Following Smallpox. A. Flores.—p. 136.
*Amebic Interstitial Hepatitis. C. Monge.—p. 139.
*The National Public Health Service in Peru.—p. 157.

Synthetic Program for Biosocial Research.—This is Fosalba's inaugural address on election to the Academia de Medicina of Peru. He states that the compulsory physical training which was introduced in Uruguay fifteen years ago has already increased the average height of the young by 17 mm. Up to 15, the height surpasses that of corresponding ages in Europe and the United States. He adds that Uruguay has made a greater reduction in the death rate from tuberculosis than has been realized in European countries. The efforts have been concentrated mainly on the "pretuberculous," striving to eradicate the predisposing factors. He describes what has been accomplished to date in concrete biosociology in the Latin American countries and the results of his own investigations.

Amebic Hepatitis.—Monge classifies hepatitis in six groups, the acute, the jaundice-inducing, the chronic, the tuberculous, the syphilitic and the toxic. He describes a case of acute interstitial hepatitis in a man of 32, who had lost 30 pounds in weight during the eight months of agonizing pains in the enormously large liver. Repeated punctures were negative, and cancer of the liver had seemed certain. Notwithstanding the absence of amebas in the stools, Monge gave tentative emetin treatment, and a complete cure followed in less than a month. Before the end of the month he found some encysted amebas in the stools. He does not know of any similar case on record of amebic hepatitis, simulating cancer.

The Problems Before the Public Health Service in Peru.—This is the letter of acceptance of Dr. Henry Hanson, an officer of the United States Public Health Service, when he was recently appointed chief of the national public health service in Peru.

Revista Española de Urología y Derm., Madrid

March, 1922, **24**, No. 279

*Stigmata of Chronic Gonorrhea in Women. L. del Portillo.—p. 113.

The Stigmata of Chronic Gonorrhea in Women.—Portillo gives a list of seven stigmata liable to be found in the vulva of women who have had gonorrhea at some time; six in the vagina, and four in the urethra. He lists among the vulvar stigmata adhesion of the opposite walls. This is very rare; it follows only severe inflammation. Papillary excrescences may be found in the vulva, vagina or urethra, and although these may be due to other causes, yet the presumption is in favor of irritation from chronic gonorrhea, as a rule. Cysts in the wall of the vulva or vagina can be felt as small torpid bunches, never causing pain, but they may grow to quite a size and they may become infected and rupture. They must not be confounded with bartholinitis. Hyperesthesia of the vulva and hypertrophy of the walls of the vulva and vagina are further suggestive, as also narrowing of the passage in either, a phlegmon in the vaginal wall, and vaginism. Partial stenosis of the vagina or urethra is also suggestive of irritation from chronic gonorrhea. The relics of gonorrhea in the uterus and adnexa are familiar to all, from metrorrhagia, cysts, adnexitis refractory to vaccines, and sterility to the complications of childbirth.

Semana Médica, Buenos Aires

April 27, 1922, **1**, No. 17

The Indications with Emergency Delivery. T. A. Chamorro.—p. 657.
*Arterial Anesthesia. B. N. Calcagno.—p. 661.
*Bacteriophagia. C. E. Pico.—p. 675.
Surgical Treatment of Chronic Hydrarthrosis. J. Moreno.—p. 679.
Pay Patients in Public Hospitals. J. G. Ruiz.—p. 681.
Prophylaxis of Cancer. F. Igea.—p. 691.

Arterial Anesthesia.—Calcagno trephined an osteomyelitic focus in the tibia of a boy of 16, under the anesthesia induced with 0.2 gm. of stovain in a 0.5 per cent. solution, injected directly into the femoral artery, through the skin. He sometimes expels the blood from the limb by winding it from the toes to the root beforehand. In one man of 52 the anesthesia was complete with only 0.12 gm. of procain, allowing amputation of the leg for syphilitic gangrene. He describes a number of other major operations on the legs done under arterial anesthesia. For the arm, it is safer to expose the artery before making the injection, or a retrograde injection might be made in the radial artery. The only contraindication is infection in the region where the artery is to be injected. The needle hole closes spontaneously afterward.

Bacteriophagia.—Pico's experiments are the first to be recorded, he says, in which the bacteriophagic action was induced with pancreatin, trypsin or papain, instead of a filtrable virus, as in the experiments of others. The bacteriophagia is thus a transmissible autolysis of micro-organisms, accelerating the normal autolysis of the bacteria. The regeneration of the lytic principle at the expense of the disintegration products of the bacteria explains the serial character of the autolysis. This, he explains, may serve as the basis for a new bacteriologic therapeutics, a lysinotherapy, based on a more general conception of the bacteriophagic phenomenon than d'Herelle visioned.

Deutsche medizinische Wochenschrift, Berlin

May 19, 1922, **48**, No. 20

Place of Vitamins in the Nutritional Therapy of Children's Diseases. E. Schiff.—p. 651.
Heredity and Constitution. K. H. Bauer.—p. 653.
Allergy Experiments on Bacteria. A. Schnabel.—p. 654.
*Syphilitic Hydrocephalus in Children. Cassel.—p. 655.
*Drinking Water and Goiter Incidence. E. Miesbach.—p. 657.
Multiple Neuritis During and Since the War. A. Knapp.—p. 659. Conc'n No. 21, p. 692.
Case of Homosexuality Cured by Implantation of Testis. E. Pfeiffer. —p. 660.
Palliative Treatment of Hay Fever. C. Dietsch.—p. 662. Begun No. 19, p. 631.
Causal Morphology and Practical Medicine. G. Ettisch.—p. 662.
Gallstones and Gastric Ulcer. G. Ledderhose.—p. 664.
Intra-Uterine Technic in Diagnosis and Treatment. H. Freund.—p. 666.

May 26, 1922, **48**, No. 21

Significance of Tuberculous Allergy for Proteotherapy and Inflammation. K. Zieler.—p. 685. Reply. H. Selter.—p. 686.
Observations of Practitioner on Arsphenamin and Mercury. Kromayer. —p. 686.
Curvature of the Diaphragm in Roentgenogram. E. Thomas.—p. 688.
Treatment of Lung Gangrene, with Special Reference to Arsphenamin Therapy. F. Peemöller.—p. 690.
Ileocecal Tuberculosis Perforating into Bladder. Reh.—p. 692.
Multiple Neuritis During and Since the War. A. Knapp.—p. 692. Conc'n.
Cyst of Sheath of Ulnar Nerve. J. P. zum Busch.—p. 694.
Freezing in Staphylococcus Infections. Bockenheimer.—p. 694.
Simple Method of Determining Leukocytes in Urine. Tannenbaum.—p. 695.
Quartz Glass and Rock-Crystal in Bacteriology. Jungblut.—p. 696.
"New Thoughts on Treatment of Carcinoma." J. Wolff.—p. 697.
Acute Peritonitis. G. Ledderhose.—p. 698.
Hemorrhages in Gynecologic Practice. H. Freund.—p. 699.

Chronic Hydrocephalus in Children.—Cassel has found the prognosis of syphilitic hydrocephalus, as a rule, unfavorable. A number of children succumb to the cerebral symptoms without securing any benefit from energetic antisyphilitic treatment. A complete cure is rarely accomplished. Most patients retain at least mental defects that are more or less marked; many become grave neuropaths that are a great burden to their family. However, in spite of the unfavorable prognosis in most cases, in no case should energetic treatment be neglected.

The Iodin Content of Drinking Water in Relation to Goiter.—Miesbach has conducted investigations in Bavaria which lead him to believe that the lack of iodin in the drinking water in certain regions may possibly be the cause of the increased incidence of goiter in those sections.

Klinische Wochenschrift, Berlin

April 1, 1922, **1**, No. 14

Bases and Significance of Physicotherapy for Internal Medicine. Goldscheider.—p. 665.
The Intravenous Injection of Drugs in Oil. Lepehne.—p. 670.
Myoelectric Researches on Affections of Corpus Striatum. E. Rehn. p. 673.
Scoliosis and Abnormal School Postures. H. Maass.—p. 675.
Partial and Total Rhinoneoplasty. J. Joseph.—p. 678.
Inflammation, Allergic Immunity and Anaphylaxis. Klinkert.—p. 680.
Effect of Quartz Lamp Irradiation on the Susceptibility of the Skin to Pain. F. von Gröer and W. von Jasinski.—p. 683.
Bulbocapnin Catalepsy. H. de Jong.—p. 684.
Isolated Paralysis of the Axillary Nerve Due to Carbon Monoxid Poisoning. E. Mendel.—p. 685.
Indications for Therapeutic Hypnosis. F. Lange.—p. 686.
Treatment of Soft Chancre. C. Bruck.—p. 689.

Medizinische Klinik, Berlin

June 4, 1922, **18**, No. 23

Infectious Gastro-Enteritis in Infants. A. Reuss.—p. 717.
*Sterility in Women. H. R. Schmidt.—p. 722.
*The Initial Pains with Ulcer. S. Jonas.—p. 723. Conc'n No. 24, p. 761.
Warning Against Attempt to Tie Up Natural Openings by Tunneling Skin. E. Sachs.—p. 727.
*Swine Erysipelas in Man. Gestewitz.—p. 729.
Polyvalent Anticatarrh Liniment. F. Grosmann.—p. 729.
*Cultivation of Tubercle Bacilli. Meyer and Fitschen.—p. 730.
*Thallium and the Endocrine System. A. Buschke and B. Peiser.—p. 731.
*Convulsions in Infants. K. Blühdorn.—p. 733.
Treatment of Various Genito-Urinary Affections. E. Portner.—p. 734.
*Present Status of Protein Therapy. J. Voehl.—p. 736.

Sterility in Women.—In the course of this dissertation on the prospects of treatment of sterility, Schmidt says that when stenosis of the cervix seems to be responsible for the sterility, the best results have been attained by Fehling's rinsing treatment. A fenestrated glass tube, the size of a lead pencil and about 5 cm. long, is introduced into the cervix. It is slightly curved, and a glass plate prevents its slipping into the uterus. It is worn for three days, and then the uterus cavity is rinsed out with a 1 per cent. solution of liquor formaldehydi. The tube is replaced for three days, and this is repeated two or three times, rinsing the uterus in this way at each change. This induces a moderate astringent action on the mucosa, and the os is mechanically and permanently enlarged, and the uterus accustomed to mechanical irritation. Pregnancy followed in a recent series in 27 per cent. of the fifty-six cases, and in 35.5 per cent. of another series of thirty-one cases.

The Initial Pains with Ulcer.—Jonas' analysis of a long series of cases demonstrates that a sensation of oppression or cramp occurring in the stomach daily or almost daily for weeks, showing some connection with intake of food, and followed by long periods of freedom from disturbances, the whole displaying a seasonal character, suggests incipient gastric or duodenal ulcer. A period of excessive peristalsis precedes the actual ulceration in stomach or duodenum.

Treatment of Swine Erysipelas in Man.—Gestewitz concludes from six cases of this kind that the disease in man is comparatively mild and local. It may heal under ordinary salves, but if not, the antiserum should be administered. In one of his cases certain general symptoms followed the eating of the well cooked meat of the diseased hog, but it is a question whether they were referable to serum sickness or to food anaphylaxis.

Cultivation of Tubercle Bacilli.—Meyer and Fitschen report almost invariable success with the Dorset egg culture medium, shaking up the yolk and white together, and adding one-fifth part of water, and slanting the test tube in the incubator till it hardens. The usual preliminary treatment with an alkaline caustic kills off the accompanying bacteria. They close the tube with paraffin and stain a smear from the culture the fourth day, and every two or three days thereafter.

Thallium a Specific Poison for the Endocrine System.—Young rats fed with bread dipped in a 1:5,000 solution of thallium acetate lost all their hair in a month. The growth was stunted, and the animals presented a cretin-like appearance. When the drug was injected, the toxic action was pronounced and often fatal. The endocrine glands showed a selective toxic effect, and the whole organism suffered secondarily through intermediation of the ductless glands. Buschke and Peiser do not know of any other substance that acts thus almost exclusively on the endocrine system. Experiments on tadpoles with thyroid treatment to counteract the thallium, and experiments on the frog heart have been confirmatory.

Treatment of Convulsions in Children.—Blühdorn recalls that the convulsions of spasmophilia occur scarcely ever outside of the winter and spring, and that breast-fed infants escape as a rule. Infants overfed with milk, with a tendency to hard stools, are the predisposed; rachitis and spasmophilia have much in common. Overheating and prevention of radiation of heat are also liable to induce convulsions. An ample supply of fluids is imperative, poured into the stomach or rectum or infused subcutaneously. If chloral fails to relieve the spasmophilic convulsion, there is probably some organic cerebral process. Calcium treatment combats the spasmophilia effectually and the child can be fed as indicated. He prescribes it in the form of 10 parts calcium chlorid; 2 parts anisated solution of ammonia; 1 part gum acacia; saccharin to taste, and water to 200 parts. The dose is 10 c.c. six or eight times a day at first and then three times a day, kept up for a long time. Spasmophilia may accompany and aggravate organic disease, as in a recent case of convulsions in whooping cough. The electric and other tests were negative, and the convulsions seemed to herald the fatal termination. As a last resort, 20 c.c. of an 8 per cent. solution of magnesium sulphate was injected, and the benefit was amazing. In all organic cases, therefore, it is well to give tentative treatment for possible spasmophilia, to eliminate this factor, at least.

Protein Therapy.—Voehl's summary of recent literature on parenteral protein therapy mentions chronic joint affections

and skin affections as the fields in which this method of treatment is proving most effectual. Although there is no general agreement, yet the testimony already available is very encouraging, although we must not forget, he adds, that, with any new treatment, the favorable results are more liable to be published than the unfavorable.

Münchener medizinische Wochenschrift, Munich

May 19, 1922, **69**, No. 20

Modern Aspects of Diabetes. K. A. Heiberg.—p. 731.
Problems and Aids in Urology. Pflaumer.—p. 733.
Intravenous Use of Salicylic Acid. E. Herzfeld.—p. 735.
Neo-Silver-Arsphenamin in Treatment of Syphilis. Zeller.—p. 737.
Operation for Cancer of Rectum. T. Köhler.—p. 738.
*Roentgen Irradiation for Hypophysial Tumors and in Gynecologic Affections of Hypophysial Origin. Blumberg.—p. 739.
Silicic Acid in Infantile Tuberculosis. Klare and Budde.—p. 741.
Pepsin in Treatment of Leukoplakia. G. Trautmann.—p. 742.
Case of Lingual Goiter. K. Zehner.—p. 747.
Three Cases of Extragenital Syphilis. E. Schardon.—p. 748.
Invasion of Bronchial Tree by Contrast Medium. Förster.—p. 748.
Methods of Recording Heredity Statistics. W. Weinberg.—p. 748.
Accidents of Operations for Hernia. A. Krecke.—p. 750.

Mesothorium Treatment of the Pituitary.—Blumberg has applied mesothorium irradiation to the hypophysis in four cases, one case of hypophysial tumor, in which the result was very satisfactory, and three cases of dysmenorrhea of hypophysial origin, in two of which considerable improvement was effected, while in the third case no effect was noticeable. Since the sella turcica constitutes, as it were, the roof of the sphenoidal sinus, he applies the mesothorium to the roof of the cavum pharyngonasale, as the most accessible point in close proximity to the hypophysis. He describes his technic in detail.

Wiener klinische Wochenschrift, Vienna

May 18, 1922, **35**, No. 20

Proteotherapy and Vaccinotherapy. B. Busson.—p. 451.
Action of Arsenicals, Adaptation of the Organism Thereto and Poisoning Therefrom. K. Ullmann.—p. 455. Cont'd.
*Immunization of Guinea-Pigs Against Typhus. E. Weil and F. Breinl.—p. 458.
An Error in the Prophylaxis of Stuttering. L. Stein.—p. 461.
Description of the Ionometer. J. Christiansen.—p. 461.

Inoculation of Guinea-Pigs with an Attenuated Typhus Confers Active Immunity on the Passively Immunized Guinea-Pigs.—Weil and Breinl report their successful search for a method by which they are able by regulation of the dosage of virus, applied to guinea-pigs, to produce an "unapparent" infection which, however, results in active immunity. They think that the method will probably be applicable to man, for Nicolle has already shown that the immune serum of guinea-pigs has a prophylactic effect on man. On the other hand, it can doubtless be assumed that convalescents' serum is effective. It is also fully established that guinea-pig virus will infect man. In both of their virus strains, the infective doses which, following an afebrile course of the infection, produced a definite active immunity, lay between 0.001 and 0.0001 gm. of brain substance. The smaller amount would infect most of the controls but would not produce an active immunity in the passively immunized animals. [Weil's name is familiar in the Weil-Felix test for typhus. His untimely death from laboratory infection was recorded recently.]

Zentralblatt für Chirurgie, Leipzig

April 8, 1922, **49**, No. 14

*Lymph Drainage in Elephantiasis. Haubenreisser.—p. 474.
*Gradual Dilatation of Stricture of Urethra. Hammesfahr.—p. 475.
*Recurrences After the Bassini Operation. J. Schwartz.—p. 476.
Mocny's Method of Treating Vessel Injuries. F. Mocny.—p. 480.
"Is the Extirpation of Suprarenals in Epilepsy Justified?" Comment. H. Kersten.—p. 482.

Payr's Lymph Drainage in Elephantiasis Cruris.—Haubenreisser reports two cases of elephantiasis cruris, in one of which lymph drainage by the Payr method accomplished a complete cure, and another case in which the same method brought about an almost complete cure.

Gradual Dilatation of Stricture of Urethra.—Hammesfahr states that in two cases of extreme narrowing of the posterior portion of the urethra following, in one instance, an operation and, in the second instance, trauma, he was able to effect a cure by passing a small ureter catheter or wire by way of the cystotomy wound through the bladder into the urethra. By this "endless" method he was able to pass rubber tubes of increasing caliber.

Recurrences Following the Bassini Operation.—Schwartz discusses a series of 500 operations for inguinal hernia by the Bassini method. In 207 cases in which reexamination was possible after from one to eleven years, there were eleven recurrences, or 5.3 per cent. Other series refer to from 10 to 20 per cent. recurrences. He describes the slight modification of the Bassini method that Friedemann employs.

Zentralblatt für Gynäkologie, Leipzig

April 8, 1922, **46**, No. 14

*Collection of Cancer Statistics. G. Winter.—p. 529.
*Sedimentation of Blood Corpuscles. G. Linzenmeier.—p. 535.
Impregnated Ovum in Relation to Corpus Luteum. Hofstätter.—p. 542.
Etiology of Corpus Luteum Cysts. K. von Oettingen.—p. 548.
Spontaneous Transformation of a Face Presentation into an Occipital Presentation, in the Pelvic Cavity. W. Walz.—p. 554.
Ovarian Therapy in Climacteric Toxicodermias. J. Hofbauer.—p. 558.

New Basis for Cancer Statistics.—The introduction of roentgen and radium therapy has made it necessary to adopt entirely different rules for cancer statistics, it being especially important that new statistics make possible a comparison of the results of operation with the outcome of irradiation. Winter has drawn up a carefully worked out scheme for statistics on the modern cancer problem. He gives the outlines of his plan.

Speed of Sedimentation of Blood Corpuscles.—Linzenmeier emphasizes again the diagnostic value of the determination of the suspension stability of blood corpuscles in gynecologic practice. If the sedimentation time is accelerated; that is, if it is less than thirty minutes, acute inflammatory processes affecting the genital organs may be suspected. The changes in the sedimentation velocity will often furnish desired information when changes in the temperature leave us in the lurch. In the differential diagnosis between recently disturbed ectopic pregnancy and acute adnexal and peritoneal affections, slow sedimentation points with a high degree of probability to tubal pregnancy. Sedimentation serves also as an excellent indicator as to the time for operative intervention in fixed retroflexion, chronic adnexal tumors and similar affections: If sedimentation occurs in less than one hour, virulent infective agents may still be present, and we had better wait with the operation; if sedimentation requires two hours or more, it is safe to go ahead with a laparotomy; latent infection need no longer be feared. The buffy coat or crusta phlogistica of the physicians of earlier centuries has again come into honor through Fåhræus' revival of a well known diagnostic principle.

Zentralblatt für innere Medizin, Leipzig

April 8, 1922, **43**, No. 14

"Stuttering in Relation to Asthma." Reply. L. Stein.—p. 233.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

April 22, 1922, **1**, No. 16

Rhinopharyngitis Mutilans from Yaws. B. M. van Driel.—p. 1604.
*Standard of Nutrition for Children. C. J. van der Loo.—p. 1611.
Action of Procain on Muscle Tonus. S. de Boer.—p. 1621.
*Flatfoot. D. Brocx.—p. 1627.
Ovarian Metastasis of Cancer. J. A. van Dongen.—p. 1630.

Standard of Nutrition in Children.—Van der Loo gives the formulas for the ten different methods in vogue for assessing the physical fitness of children, and points out the fallacies of all of them, from Pirquet to Dryer. He then describes his own method which, he affirms, comes nearer to the ideal than any of the others for sifting out the undernourished. It is based on a standard table showing the normal weight and chest measure for a given height. The difference between the chest measure and the normal figure is multiplied by —2.5 for each centimeter, and the difference in weight is multiplied by 4, 3 or 2 for each kilogram. His table is made up from several thousand normal Amsterdam children. His index is 100 times the weight divided by the square of the diameter of the chest, multiplied by the height. The circumference of the chest is 3.75 times the diameter. He explains,

for example, that a child 114 cm. tall, with a chest measure of 54 cm., weighs 16.6 kg. The normal figures he gives for a child 114 cm. tall are, chest, 55.6 cm.; and weight, 19.2 kg. The child is thus 2.6 kg. too light and its chest 1.6 cm. too narrow. Multiplying -2.6 by 4, and adding -1.6 multiplied by $-2.5 = 6.4$. We thus get $\frac{6.4}{4} = 1.6$ kg. as the loss from underfeeding and $2.6 - 1.6 = 1$ kg. the loss in weight from the narrow chest.

Prophylaxis of Flatfoot.—Brocx has been impressed in his sixteen years of sickness insurance practice with the number of cases in which flatfoot develops after some accident to the foot or sickness confining to bed for a time. When the patients get up after this, flatfoot develops. He ascribes this insufficiency of the foot to the weakening of the muscles from disuse, but above all to the fact that when the patient gets up, he wears loose, old shoes or slippers at first. The weight-bearing, with the muscles thus weakened, invites flatfoot, but it can be warded off by having a special supporting sole in each shoe. Walking is the best exercise to restore normal tone to the muscles, but until this is realized, the arch of the foot should be supported.

April 29, 1922, **1**, No. 17

*Bacilli Carriers. H. Aldershoff.—p. 1680.
*Simple Treatment of Hemoptysis. J. Geers.—p. 1688.
*Induced Fever in Treatment of General Paresis. A. Gans.—p. 1693.
Sachs-Georgi Versus Wassermann Reaction. D. E. Cohen.—p. 1698.
Case of Abdominal Contusion. A. E. Nordholt.—p. 1704.
Intragluteal Injection of Turpentine in Treatment of Gonococcus Arthritis. K. A. Rombach.—p. 1707.

Bacilli Carriers.—Aldershoff warns that in the attempt to detect bacilli carriers and bacilli holders it is very easy to overdo, and bring discredit on preventive medicine in general. He advises to restrict the search to the cases in which the epidemiologic findings indicate a carrier of virulent germs. It should then be legally possible to take the necessary measures. Their aim should be to keep the carriers and holders out of occupations in which the danger for others is especially great. "Until we know of some simple and reliable method to distinguish between virulent and nonvirulent germs, there is no use or sense in wholesale examinations on a large scale for carriers."

Treatment for Hemoptysis.—Geers is chief of the public sanatorium at Joure, and until 1917 had usually from 18 to 24 severe cases of hemorrhage from the lungs each year, with more than twice as many mild cases, and there was always at least one fatal case of hemoptysis during the year. Since that year he has not had a single case of hemorrhage from the lungs, and he ascribes this success to the practice then introduced of giving milk by the rectum, as a readily absorbable solution of calcium. Milk by the mouth clots, and its salts cannot be readily absorbed. Solutions of calcium salts given internally or subcutaneously often fail. The milk enema was the last resort at the twenty-third hemorrhage in his first case, after failure of the whole arsenal of other measures. There seems to be a certain periodicity about hemorrhages from the lungs, and by study of the pulse, the filling of the blood vessels, the color of the face, the size of the pupils and the subjective symptoms, it is not difficult to tell when hemoptysis is impending. Then he begins at once with the enema of 250 gm. of tepid milk every evening, having it retained as long as possible. All the milk in the institution is always heated to 90 C. The enema may be given mornings, too, if necessary. In special cases a subcutaneous injection of gelatin may be advisable, but he has not found this necessary more than twice in the last four years. He has had no opportunity to try this treatment in hemophilia, but it proved useful in a bleeding gastric ulcer case. He advises the practitioner to inject the gelatin first and then follow with the milk enemas. He warns against morphin as inviting aspiration pneumonia after hemoptysis.

Therapeutic Inoculation with Malaria in General Paresis.—Gans reports the application in nine cases of general paresis of Wagner-Jauregg's method of inducing a fever by inoculating with malaria. It has been described as a system of therapeutic "driving out the devil with Beelzebub." Gans' experience was favorable, confirming Wagner's statements. The effect in three of his cases, he says, was remarkable; the others were too far advanced for any hope of benefit. In a comment on this article by G. C. Bolten (page 2107) he mentions that he had two patients with general paresis who had fever from tuberculosis, but this fever did not modify their general paresis. He also mentions that in the East Indies malaria is common in Chinese workmen, but they often develop general paresis and tabes.

May 6, 1922, **1**, No. 18

*Pulmonary Tuberculosis in Children. Cornelia de Lange.—p. 1768.
Electrochemical Research on Cancer. N. Waterman.—p. 1780.
Active Immunization Against Diphtheria. Hulshoff Pol.—p. 1789.
The More Recent Literature on Rachitis. L. Havinga.—p. 1793.
A Pioneer Insane Asylum; 1442. H. Schade.—p. 1803.

Diagnosis of Pulmonary Tuberculosis in Children.—De Lange deplores the too frequent tendency of practitioners to decide that in a child, with a tuberculous lesion anywhere, a process in the lung must necessarily be of a tuberculous nature. Even chronic lung processes with negative tuberculin tests are regarded as tuberculous, when in fact there is merely some infiltration and tendency to bronchiectasia. As the lung clears up in time, the case is reported as an example of a brilliant cure under the treatment that had happened to be used at the time. It is a grave blunder to send such children to a tuberculosis sanatorium. A child under 8 with physical findings of such extent would rapidly succumb, if they were actually of a tuberculous nature. There may be a small tuberculous focus with an encircling nonspecific infiltration. The French "splénopneumonie" is one form of these chronic nontuberculous affections of the lung in children. A chronic pneumonia may entail retraction, and in asthenic children the right subclavicular fossa is often sunken in. Apical processes are rare in children, while a faulty attitude may induce deceptive physical findings. The difference in the size of the two lungs may also prove misleading. Extensive chronic lung processes in children under 8, which clear up or remain stationary, are not pulmonary tuberculosis. She describes several typical cases in which only the ultimate recovery corrected the diagnosis.

Hygiea, Stockholm

June 15, 1922, **84**, No. 11

*Phlegmonous Conditions in Digestive Tract. R. Roman.—p. 433.

Phlegmonous Inflammatory Conditions in Digestive Tract.—Roman gives the tabulated details of 271 cases that he has compiled, and tabulates separately the group of 41 cases in which the intestinal wall was involved. In the 41 intestinal cases, 9 were saved of the 12 treated by radical operation, but all died under medical treatment or palliative operation alone. Fourteen cases were in the duodenum, all fatal, but one patient was cured by resection of the bowel involved in the 6 jejunum cases, and 6 of the 8 ileum or cecum cases. Two others were cured by resection of the colon. MacCallum, Dowd and Taylor-Lakin are the only Anglo-Saxon surgeons cited. Death occurred in twenty-four hours up to thirty-nine days, the average duration being from two to five days. In a case personally observed, the acute phlegmonous sigmoiditis proved fatal in one week. In a second case, the phlegmonous inflammation extended over a long stretch of the ileum, and the man of 25 recovered after this segment had been resected. The sudden onset of diarrhea, without pains, in the first case, contrasted with the severe colic pains and chills in the second case, without diarrhea or vomiting. The young man returned to work for four days, but the pains and tenderness kept up and a laparotomy on the presumptive diagnosis of appendicitis revealed the phlegmonous changes and allowed the complete cure. Both the men had been supposedly in perfect health before. In the total 271 cases, 180 were men and 73 women; the sex of the others was not specified. The mortality was 91.2 per cent. in the 217 cases of phlegmonous gastritis, but was 100 per cent. in the sigmoid, transverse colon, duodenum and esophagus cases. The acute onset and rapidly severe general symptoms are common to all localizations, and there seldom had been any symptoms before to call attention to the digestive tract.